RAD
data communications

Installation and Operation Manual

# *ASMi-52L*

## *2/4-Wire SHDSL Modem*

***Version 1.0***

# ASMi-52L

## 2/4-Wire SHDSL Modem

## Installation and Operation Manual

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This Agreement shall be construed and governed in accordance with the laws of the State of Israel.

# General Safety Instructions

The following instructions serve as a general guide for the safe installation and operation of telecommunications products. Additional instructions, if applicable, are included inside the manual.

## Safety Symbols

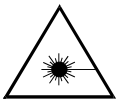
*Warning*

**This symbol may appear on the equipment or in the text. It indicates potential safety hazards regarding product operation or maintenance to operator or service personnel.**

**Danger of electric shock! Avoid any contact with the marked surface while the product is energized or connected to outdoor telecommunication lines.**

.

Protective earth: the marked lug or terminal should be connected to the building protective earth bus.



*Warning*

**Some products may be equipped with a laser diode. In such cases, a label with the laser class and other warnings as applicable will be attached near the optical transmitter. The laser warning symbol may be also attached. Please observe the following precautions:**

- **Before turning on the equipment, make sure that the fiber optic cable is intact and is connected to the transmitter.**
- **Do not attempt to adjust the laser drive current.**
- **Do not use broken or unterminated fiber-optic cables/connectors or look straight at the laser beam.**
- **The use of optical devices with the equipment will increase eye hazard.**
- **Use of controls, adjustments or performing procedures other than those specified herein, may result in hazardous radiation exposure.**

**ATTENTION: The laser beam may be invisible!**

Always observe standard safety precautions during installation, operation and maintenance of this product. Only qualified and authorized service personnel should carry out adjustment, maintenance or repairs to this product. No installation, adjustment, maintenance or repairs should be performed by either the operator or the user.

# Handling Energized Products

## General Safety Practices

Do not touch or tamper with the power supply when the power cord is connected. Line voltages may be present inside certain products even when the power switch (if installed) is in the OFF position or a fuse is blown. For DC-powered products, although the voltages levels are usually not hazardous, energy hazards may still exist.

Before working on equipment connected to power lines or telecommunication lines, remove jewelry or any other metallic object that may come into contact with energized parts.

Unless otherwise specified, all products are intended to be grounded during normal use. Grounding is provided by connecting the mains plug to a wall socket with a protective earth terminal. If an earth lug is provided on the product, it should be connected to the protective earth at all times, by a wire with a diameter of 18 AWG or wider. Rack-mounted equipment should be mounted only in earthed racks and cabinets.

Always make the ground connection first and disconnect it last. Do not connect telecommunication cables to ungrounded equipment. Make sure that all other cables are disconnected before disconnecting the ground.

## Connection of AC Mains

Make sure that the electrical installation complies with local codes.

Always connect the AC plug to a wall socket with a protective ground.

The maximum permissible current capability of the branch distribution circuit that supplies power to the product is 16A. The circuit breaker in the building installation should have high breaking capacity and must operate at short-circuit current exceeding 35A. If the power distribution type is an IT type, the circuit breaker must disconnect both poles simultaneously.

Always connect the power cord first to the equipment and then to the wall socket. If a power switch is provided in the equipment, set it to the OFF position. If the power cord cannot be readily disconnected in case of emergency, make sure that a readily accessible circuit breaker or emergency switch is installed in the building installation.

## Connection of DC Mains

Unless otherwise specified in the manual, the DC input to the equipment is floating in reference to the ground. Any single pole can be externally grounded.

Due to the high current capability of DC mains systems, care should be taken when connecting the DC supply to avoid short-circuits and fire hazards.

DC units should be installed in a restricted access area, i.e. an area where access is authorized only to qualified service and maintenance personnel.

Make sure that the DC supply is electrically isolated from any AC source and that the installation complies with the local codes.

The maximum permissible current capability of the branch distribution circuit that supplies power to the product is 16A. The circuit breaker in the building installation should have high breaking capacity and must operate at short-circuit current exceeding 35A.

Before connecting the DC supply wires, ensure that power is removed form the DC circuit. Locate the circuit breaker of the panel board that services the equipment and switch it to the OFF position. When connecting the DC supply wires, first connect the ground wire to the corresponding terminal, then the positive pole and last the negative pole. Switch the circuit breaker back to the ON position.

A readily accessible disconnect device that is suitably rated and approved should be incorporated in the building installation. If the DC supply is floating, the disconnect device must disconnect both poles simultaneously.

# Connection of Data and Telecommunications Cables

Data and telecommunication interfaces are classified according to their safety status.

The following table lists the status of several standard interfaces. If the status of a given port differs from the standard one, a notice will be given in the manual.

| Ports | Safety Status | |
|---|---|---|
| V.11, V.28, V.35, V.36, RS-530, X.21, 10 BaseT, 100 BaseT, Unbalanced E1, E2, E3, STM, DS-2, DS-3, S-Interface ISDN, Analog voice E&M | SELV | Safety Extra Low Voltage:<br>Ports which do not present a safety hazard. Usually up to 30 VAC or 60 VDC. |
| xDSL (without feeding voltage), Balanced E1, T1, Sub E1/T1 | TNV-1 | Telecommunication Network Voltage-1:<br>Ports whose normal operating voltage is within the limits of SELV, on which overvoltages from telecommunications networks are possible. |
| FXS (Foreign Exchange Subscriber) | TNV-2 | Telecommunication Network Voltage-2:<br>Ports whose normal operating voltage exceeds the limits of SELV (usually up to 120 VDC or telephone ringing voltages), on which overvoltages from telecommunication networks are not possible. These ports are not permitted to be directly connected to external telephone and data lines. |
| FXO (Foreign Exchange Office), xDSL (with feeding voltage), U-Interface ISDN | TNV-3 | Telecommunication Network Voltage-3:<br>Ports whose normal operating voltage exceeds the limits of SELV (usually up to 120 VDC or telephone ringing voltages), on which overvoltages from telecommunication networks are possible. |

**Always connect a given port to a port of the same safety status. If in doubt, seek the assistance of a qualified safety engineer.**

Always make sure that the equipment is grounded before connecting telecommunication cables. Do not disconnect the ground connection before disconnecting all telecommunications cables.

Some SELV and non-SELV circuits use the same connectors. Use caution when connecting cables. Extra caution should be exercised during thunderstorms.

When using shielded or coaxial cables, verify that there is a good ground connection at both ends. The earthing and bonding of the ground connections should comply with the local codes.

The telecommunication wiring in the building may be damaged or present a fire hazard in case of contact between exposed external wires and the AC power lines. In order to reduce the risk, there are restrictions on the diameter of wires in the telecom cables, between the equipment and the mating connectors.

***Caution***

To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cords.

***Attention***

Pour réduire les risques s'incendie, utiliser seulement des conducteurs de télécommunications 26 AWG ou de section supérieure.

Some ports are suitable for connection to intra-building or non-exposed wiring or cabling only. In such cases, a notice will be given in the installation instructions.

Do not attempt to tamper with any carrier-provided equipment or connection hardware.

# Electromagnetic Compatibility (EMC)

The equipment is designed and approved to comply with the electromagnetic regulations of major regulatory bodies. The following instructions may enhance the performance of the equipment and will provide better protection against excessive emission and better immunity against disturbances.

A good earth connection is essential. When installing the equipment in a rack, make sure to remove all traces of paint from the mounting points. Use suitable lock-washers and torque. If an external grounding lug is provided, connect it to the earth bus using braided wire as short as possible.

The equipment is designed to comply with EMC requirements when connecting it with unshielded twisted pair (UTP) cables. However, the use of shielded wires is always recommended, especially for high-rate data. In some cases, when unshielded wires are used, ferrite cores should be installed on certain cables. In such cases, special instructions are provided in the manual.

Disconnect all wires which are not in permanent use, such as cables used for one-time configuration.

The compliance of the equipment with the regulations for conducted emission on the data lines is dependent on the cable quality. The emission is tested for UTP with 80 dB longitudinal conversion loss (LCL).

Unless otherwise specified or described in the manual, TNV-1 and TNV-3 ports provide secondary protection against surges on the data lines. Primary protectors should be provided in the building installation.

The equipment is designed to provide adequate protection against electro-static discharge (ESD). However, it is good working practice to use caution when connecting cables terminated with plastic connectors (without a grounded metal hood, such as flat cables) to sensitive data lines. Before connecting such cables, discharge yourself by touching earth ground or wear an ESD preventive wrist strap.

## FCC-15 User Information

This equipment has been tested and found to comply with the limits of the Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the Installation and Operation manual, may cause harmful interference to the radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

# Canadian Emission Requirements

This Class A digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulation.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

# Warning per EN 55022 (CISPR-22)

| | |
|---|---|
| ***Warning*** | This is a class A product. In a domestic environment, this product may cause radio interference, in which case the user will be required to take adequate measures. |
| ***Avertissement*** | Cet appareil est un appareil de Classe A. Dans un environnement résidentiel, cet appareil peut provoquer des brouillages radioélectriques. Dans ces cas, il peut être demandé à l'utilisateur de prendre les mesures appropriées. |
| ***Achtung*** | Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkströrungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist. |

# Declaration of Conformity

**Manufacturer's Name:** RAD Data Communications Ltd.

**Manufacturer's Address:** 24 Raoul Wallenberg St.
Tel Aviv 69719
Israel

declares that the product:

**Product Name:** ASMi-52L

Conforms to the following standard(s) or other normative document(s):

| | | |
|---|---|---|
| **EMC**: | EN 55022:1998 + A1:2000, A2:2003 | Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement. |
| | EN 55024:1998 + A1:2001, A2:2003 | Information technology equipment – Immunity characteristics – Limits and methods of measurement. |
| **Safety**: | EN 60950-1:2001 | Information technology equipment – Safety – Part 1: General requirements. |

**Supplementary Information**:

The product herewith complies with the requirements of the EMC Directive 89/336/EEC, the Low Voltage Directive 73/23/EEC and the R&TTE Directive 99/5/EC for wired equipment. The product was tested in a typical configuration.

Tel Aviv, 23 April 2006

Haim Karshen
VP Quality

**European Contact:** RAD Data Communications GmbH, Otto-Hahn-Str. 28-30,
85521 Ottobrunn-Riemerling, Germany

# Quick Start Guide

Installation of ASMi-52L should be carried out only by an experienced technician. If you are familiar with ASMi-52L, use this guide to prepare the units for operation.

## 1. Installing ASMi-52L

### Connecting the Interfaces

1. Connect the line to the rear panel terminal block connector dedicated SHDSL.
2. Connect the DTE to the appropriate rear panel connector.
3. Connect the control terminal to the rear panel CONTROL connector.

### Connecting the Power

- Connect the AC or DC power to the ASMi-52L modem.

  The unit has no power switch. Operation starts when the power is applied to the rear panel power connector.

## 2. Configuring ASMi-52L

Configure ASMi-52L to the desired operation mode via an ASCII terminal connected to the rear panel CONTROL port directly or via a modem link.

### Connecting the Terminal

➤ **To connect the terminal:**

1. Connect the terminal cable to the CONTROL connector of ASMi-52L.
2. Turn the control terminal on.
3. Configure the terminal to the default communication parameters: 9.6 kbps, one start bit, eight data bits, no parity, one stop bit.
4. Select the full-duplex mode.
5. Turn the terminal echo off.
6. Disable any type of flow control.

   You are now ready to start a control session.

## Configuring the Master Clock

➤ **To configure the master clock:**

- From the System Configuration menu (**Main menu > Configuration > System Configuration > Master Clock**), configure the central ASMi-52L clock to external or internal and remote ASMi-52L clock to the receive clock.

## Configuring the SHDSL Interface

➤ **To configure the SHDSL interface:**

- From the SHDSL Configuration menu (**Main menu > Configuration > Port Configuration > SHDSL Configuration**), configure the following SHDSL parameters:
  - SHDSL compatibility
  - Power backoff
  - Snext margin, if line probing is set to adaptive
  - Current margin, if line probing is set to adaptive
  - Power spectral density (for ASMi-52L with 2-wire line interface and line probing set to fixed).
  - Line probing
  - Line type (for 4-wire ASMi-52L units only)
  - Loop attenuation threshold
  - SNR margin threshold.

## Configuring the DTE Interface

ASMi-52L includes a serial or 10/100BaseT DTE interface.

### Configuring the Serial Interface

➤ **To configure the serial interface:**

- From the DTE Port Configuration (**Main menu > Configuration > Port Configuration > DTE Configuration**), select the required data rate.

### Configuring the 10/100BaseT Interface

➤ **To configure 10/100BaseT parameters:**

1. From the LAN Configuration menu (**Main menu > Configuration > LAN Configuration**), configure the following LAN parameters:
   - Operation mode
   - Bridge static table
   - Aging timeout
   - LAN rate.

***Note***

*For units with the four port integrated switch, configure the parameters one time.*

2. Configure the Autonegotiation per port
3. Configure the Max Advertised Capability per port.

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**Appendix A. Interface Connector Specifications**

# Chapter 1
# Introduction

## 1.1 Overview

ASMi-52L is an SHDSL modem, which operates in full duplex over 2/4-wire lines and offers a cost-effective solution for delivering digital data to customer premises over the existing copper cables. ASMi-52L handles multiple data rates in the range of 64–4608 kbps. The modem supports X.21, V.35, and 10/100BaseT interfaces. In addition, ASMi-52L may contain a Ethernet/Fast Ethernet integrated bridge with VLAN management support.

ASMi-52L uses TC-PAM coding and complies with the ITU-T G.991.2 requirements.

### Versions

#### DTE interface

- X.21 interface
- V.35 interface
- 10/100BaseT interface
- 4-port 10/100BaseT with integrated switch.

#### Line Interface

- 2-wire
- 4-wire.

### Applications

*Figure 1-1* illustrates a typical ASMi-52L application, in which standalone modems operate opposite each other. *Figure 1-2* shows a typical application of the remote ASMi-52L units with a centrally located ASMi-52CD dual modem cards.

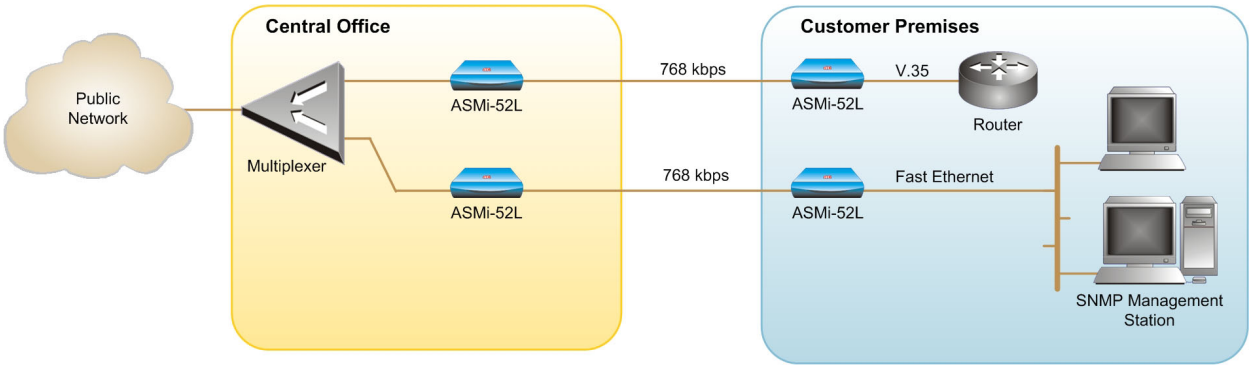


*Figure 1-1. Standalone Modem Application*

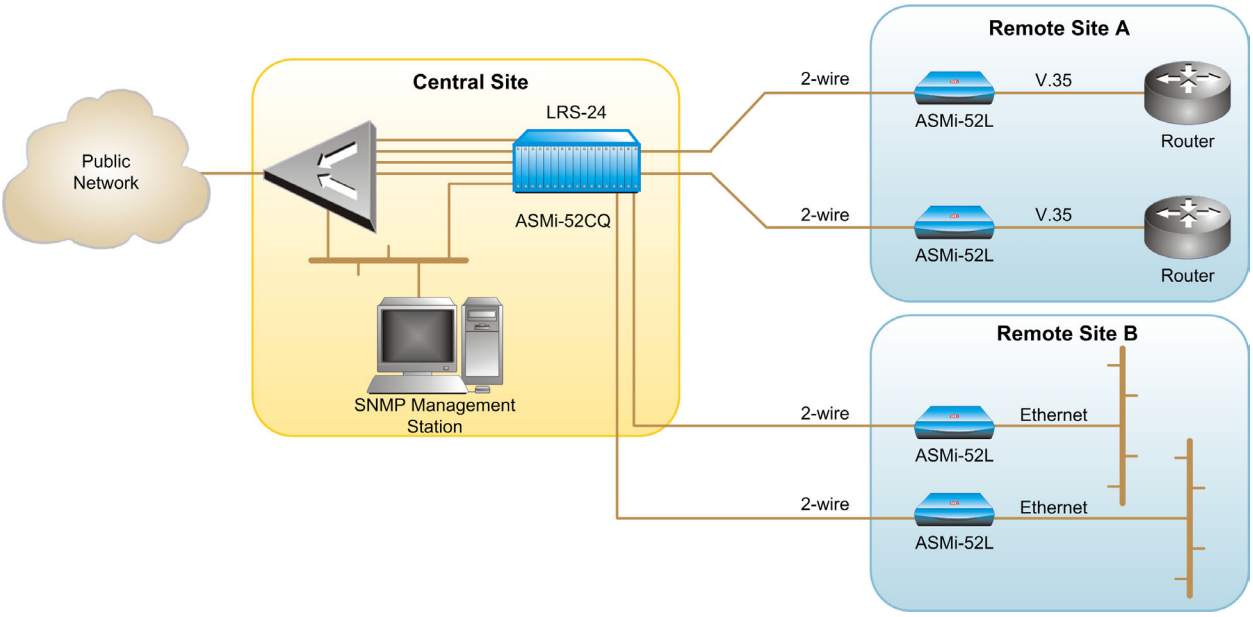


*Figure 1-2. ASMi-52L Modems Operating opposite ASMi-52CQ Cards*

## Features

### Functionality

ASMi-52L can be configured to operate in a CO (central office) or CPE (customer premises equipment) mode.

### Line Interface

ASMi-52L extends the range of data transmission over 2/4-wire lines up to 7.7 km (4.8 miles), by employing SHDSL TC-PAM technology. ASMi-52L operation complies with the requirements of the ITU-T G.991.2 standard. 4-wire ASMi-52L units can be configured to operate over 4-wire or 2-wire lines.

*Table 1-1* lists typical ASMi-52L ranges over 2/4-wire 26 AWG line.

*Table 1-1. Typical Ranges (26 AWG)*

| Data Rate | 2-wire | | 4-wire | |
|---|---|---|---|---|
| [kbps] | [km] | [miles] | [km] | [miles] |
| 64 | – | – | – | – |
| 128 | – | – | – | – |
| 256 | 7.5 | 4.6 | – | – |
| 384 | 6.5 | 4.0 | 7.7 | 4.8 |
| 512 | 6.2 | 3.8 | 7.2 | 4.5 |
| 1024 | 5.2 | 3.2 | 6.5 | 4.0 |
| 1536 | 4.7 | 2.9 | 5.7 | 3.5 |
| 2048 | 4.0 | 2.5 | 5.5 | 3.4 |
| 2304 | 4.0 | 2.5 | 5.0 | 3.1 |
| 4096 | – | – | 4.0 | 2.5 |
| 4608 | – | – | 3.7 | 2.3 |

## DTE Interface

ASMi-52L supports the following DTE interfaces:

- X.21
- V.35
- Ethernet/Fast Ethernet bridge with VLAN support (combined with management LAN port)
- Four port integrated Ethernet/Fast Ethernet switch.

When ASMi-52L is ordered only with the 10/100BaseT port option, the port is used both for transfer of the user and management data.

ASMi-52L supports multiple data rates in the range between 64 kbps and 4608 kbps. Data rate depends on the following factors:

- Line interface type (2-wire or 4-wire)
- Clock mode (internal or external).

*Table 1-2* details the ASMi-52L data rates supported.

*Table 1-2. ASMi-52L Data Rates*

| Clock Mode | | Line Interface | |
|---|---|---|---|
| **Local ASMi-52L** | **Remote ASMi-52L** | **2-wire** [kbps] | **4-wire** [kbps] |
| Internal | Receive | 64, 128, 192, 256, 384, 512, 576, 768, 1024, 1152, 1536, 2048, 2304 | 128, 256, 384, 512, 768, 1024, 1152, 1536, 2048, 2304, 3072, 4096, 4608 |
| External | Receive | N × 64 kbps (N = 1…36) | N × 128 kbps (N = 1…36) |

## Timing

ASMi-52L supports three clock modes:

- Internal, derived from its internal oscillator (CO mode)
- External, supplied by the attached DTE
- Receive, recovered from the received line signal (CPE mode).

## Management

ASMi-52L supports the following management options:

- Telnet via dedicated 10/100BaseT port
- SNMP network management (RADview) via dedicated 10/100BaseT port in Ethernet options only
- PC, running a Web browsing application (ConfiguRAD).

### *EOC*

ASMi-52L provides an inband management channel (EOC) for end-to-end system management and supervision. This management channel uses SHDSL overhead bits and operates without interfering with data transmission.

### *ConfiguRAD*

ConfiguRAD is user-friendly Web-based terminal management system serving for remote device configuration and maintenance. It is embedded in ASMi-52L and provided at no extra cost. ConfiguRAD can be run from any standard Web browser.

### *Dial-In*

The V.24 terminal port supports dial-up modem connection for remote management of ASMi-52L over telephone lines.

### *Dial-Out*

The V.24 terminal port supports alarm dial-out.

## Diagnostics

ASMi-52L supports activation of the following:

- Local loopback
- Remote loopback
- Remote loopback at SHDSL repeater (activated from the local unit).

All tests can be activated from the local unit or from the remote unit.

Real time alarms provide information on the system status, indicating management failure, synchronization loss, and other conditions.

## Statistic Collection

ASMi-52L supports SHDSL statistics collection.

## SHDSL Repeaters

Up to eight SHDSL repeaters can be installed in line to increase the operation range of the modem. ASMi-52L provides basic management of the repeaters.

## Control Port Characteristics

ASMi-52L includes a V.24 (RS-232) asynchronous DCE port, designated CONTROL and terminated in a 9-pin D-type female connector. The control port continuously monitors the incoming data stream and immediately responds to any input string received through this port.

The terminal can be connected either directly to the ASMi-52L control port, or through a modem or any other type of full-duplex data link. The ASMi-52L control port interface type must be set in accordance with the connection method, as follows:

- DCE – direct connection to terminals. Since terminals usually have DTE interfaces, the connection to the port is made by means of a straight-through cable.
- DTE – connection through a modem or data link. In this case, you need a cross cable (also called a null modem cable) to connect to the CONTROL connector.

The ASMi-52L control port can be configured to communicate at the following 57 or 115.2 kbps..6 rates: 9.6, 19.2, 38.4,

## 1.2 Physical Description

*Figure 1-3* shows a 3D view of the ASMi-52L unit in the plastic enclosure.

*Figure 1-3. ASMi-52L, 3D View*

The front panel includes several LEDs, which display the status of power, data flow and provide diagnostics. For a detailed description of the front panel, see *Chapter 3*.

The rear panel includes AC/DC power connector, a DTE connector, a line connector, and a V.24 terminal connector. The ASMi-52L rear panel is described in greater detail in *Chapter 2*.

## 1.3 Functional Description

This section provides a functional description of ASMi-52L in the form of block diagrams (*Figure 1-4* and *Figure 1-5*).

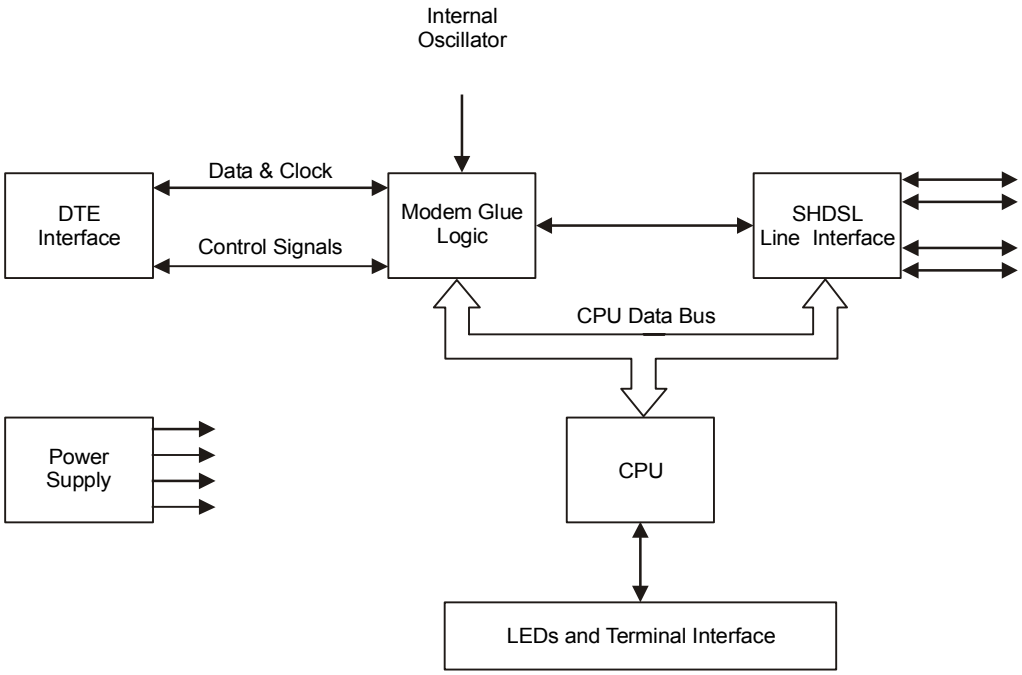


*Figure 1-4. ASMi-52L/4W with Serial Interface X.21/V.35*

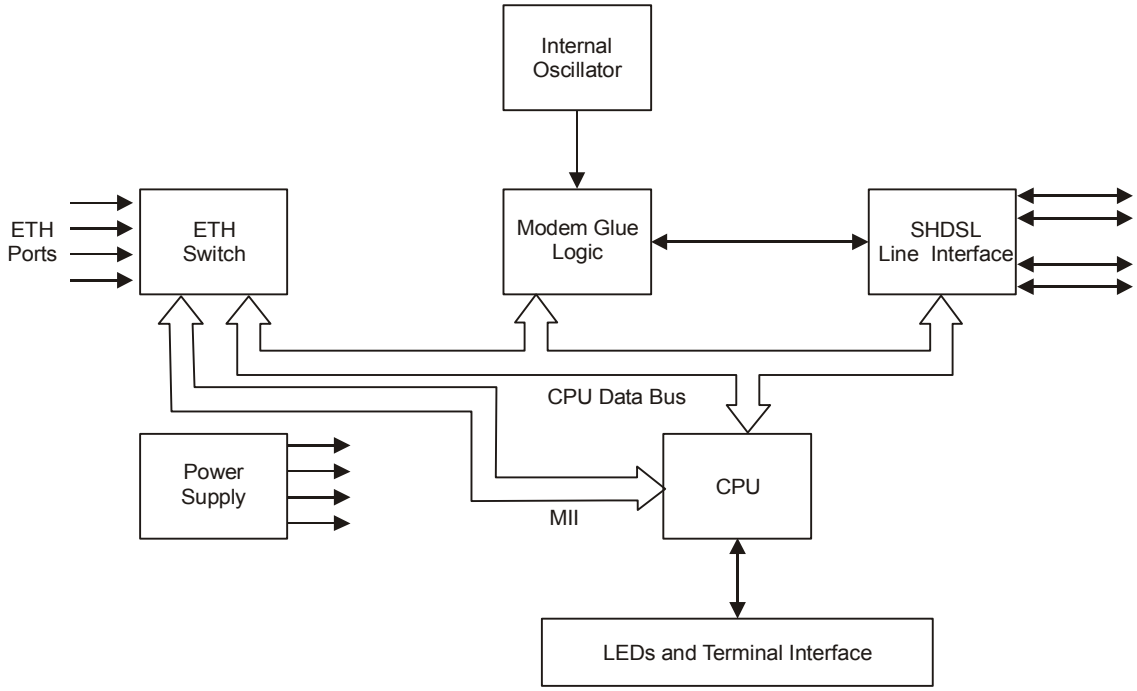


*Figure 1-5. ASMi-52L/4W with 10/100BaseT Integrated Switch*

The ASMi-52L modem consists of the following major modules:

**Serial DTE interface** – Prepares the digital data coming from the DTE into a data stream for the modem glue logic. In addition it translates the data from the modem glue logic into digital data to be sent to the DTE.

**Internal oscillator** – Serves as a source of internal clock for the ASMi-52L unit.

**Modem glue logic module** – Processes the data from/to the SHDSL interface module.

**SHDSL line interface** – Translates the received and transmitted data from the SHDSL line to the DTE interface, and vice versa.

**Power supply** – Provides 1.8V, 2.5V, 3.3V, 5V and -5V voltage to the ASMi-52L internal elements.

**CPU** – Controls the ASMi-52L operation.

**10/100BaseT switch** – For four 10/100BaseT ports, functions as a switch. Provides LAN connection to the SNMP management station or Telnet host.

**LEDs and terminal interface** – Provides modem status information via LED indicators on the front panel, and communicates with the supervisory terminal.

## 1.4 Technical Specifications

| | | |
|---|---|---|
| **Line Interface** | *Type* | 2/4-wire unconditioned dedicated line |
| | *Line Coding* | TC-PAM |
| | *Range* | See *Table 1-1* |
| | *Impedance* | 135Ω |
| | *Connector* | RJ-45 |
| | *Protection* | ITU K.21, UL60950 |
| **DTE Interface** | *Data Rate* | See *Table 1-2* |
| | *Connector* | • X.21: 15-pin, D-type, female<br>• V.35: 34-pin, female<br>• 10/100BaseT: RJ-45 |
| **Terminal Control Port** | *Interface* | V.24 (RS-232) |
| | *Type* | DTE/DCE |
| | *Format* | 8 bits, no parity |
| | *Baud Rate* | 9.6, 19.2, 38.4, 57.6, 115.2 kbps |
| | *Connector* | 9-pin, D-type female |
| **Ethernet Port** | *Interface* | 10/100BaseT |
| | *Connector* | RJ-45 (4 connectors in 4 Ethernet version) |

| | | |
|---|---|---|
| **Timing** | | Derived from three alternative sources:<br>• Internal oscillator<br>• External, from the attached DTE<br>• Receive, derived from the received signal |
| **Diagnostics** | *Loopbacks* | ITU V.54 (V.35 and X.21 only):<br>• Local loopback, activated via management software, or in V.35 versions by the DTE interface signal<br>• Remote loopback, activated via management software, or in V.35 versions by the DTE interface signal<br>• Remote loopback at SHDSL repeater |
| | *Statistics Collection* | SHDSL performance |
| **Indicators** | *PWR (green)* | Power |
| | *TEST (red)* | Test |
| | *SYNC A/B (green/red)* | Synchronization of DSL line |
| | *DATA (yellow)* | Data Transfer |
| | *ALM (red)* | Alarm |
| **Physical** | | |
| | *Height* | 43.7 mm / 1.7 in |
| | *Width* | 217 mm / 8.54 in |
| | *Depth* | 170 mm / 6.7 in |
| | *Weight* | 0.5 kg / 1.1 lb |
| **Power Source** | *AC/DC Voltage* | Wide range power supply:<br>100–240 VAC or -40/60 VDC |
| | *Power Consumption* | 2-wire: 6W max<br>4-wire: 8W max |
| **Environment** | *Temperature* | 0–50°C / 32–122°F |
| | *Humidity* | Up to 90%, non–condensing |

# Chapter 2
# Installation and Setup

## 2.1 Introduction

This chapter describes installation and setup procedures for the standalone ASMi-52L modem.

After installing the unit:

- Refer to *Chapter 3* for the operating instructions.
- Refer to *Chapter 4* for the detailed system configuration procedures using an ASCII terminal connected to the ASMi-52L control port.

If a problem is encountered, refer to *Chapter 6* for test and diagnostic instructions.

The ASMi-52L standalone unit is designed for desktop or bench installation and is delivered as a fully assembled unit. No provisions are made for bolting the unit to a tabletop.

***Warning***

**Internal settings, adjustment, maintenance, and repairs may be performed only by a skilled technician who is aware of the hazards involved. Always observe standard safety precautions during installation, operation, and maintenance of this product.**

## 2.2 Site Requirements and Prerequisites

AC-powered ASMi-52L units should be installed within 1.5m (5 ft) of an easily-accessible grounded AC outlet capable of furnishing the voltage in accordance with ASMi-52L nominal supply voltage.

DC-powered ASMi-52L units require a -48 VDC power source, which must be adequately isolated from the main supply.

Allow at least 90 cm (36 in) of frontal clearance for operating and maintenance accessibility. Allow at least 10 cm (4 in) clearance at the rear of the unit for signal lines and interface cables.

The ambient operating temperature of ASMi-52L should be 0 to 50°C (32 to 122°F), at a relative humidity of up to 90%, non-condensing.

## 2.3 Package Contents

The ASMi-52L package includes the following items:

- One ASMi-52L unit
- Technical documentation CD
- Power cord (VAC) and AC/DC plug (-48 VDC)
- Terminal block female connector for the Line connection
- RM-33-2 rack mount kit for the plastic case unit option
- RM-35 rack mount kit for the metal case unit option.

## 2.4 Connecting the Interface Cables

*Figure 2-1* illustrates typical rear panel of ASMi-52L in a plastic enclosure with a 4-wire line interface, control port, and the user interface. The user interface depends on the version ordered.

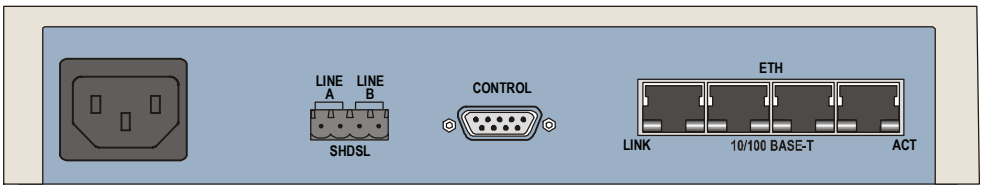


*Figure 2-1. ASMi-52L Rear Panel (Plastic Enclosure)*

### Connecting the Line

The ASMi-52L line interface terminates in a 4-pin terminal block connector.

➤ **To connect the line connector:**

- Connect the line cable to the terminal block connector designated SHDSL.

### Connecting the DTE Interface

The ASMi-52L DTE interface provides interface for input/output data, clock reference and control signals between the modem and the DTE. The DTE interface terminates in one of the following connectors:

- X.21 – 15-pin, D-type, female
- V.35 – 34-pin, female
- ETH – RJ-45 (one or four ports).

➤ **To connect the DTE:**

- Connect the DTE to the appropriate rear panel DTE interface connector of the ASMi-52L modem.

*Appendix A* specifies the DTE connector pinouts.

## 2.5 Connecting the Power Cables

ASMi-52L is equipped with a dual input AC/DC power supply. AC or DC power is supplied to ASMi-52L via a standard 3-prong power input connector on the rear panel (see *Figure 2-1*).

***Warning***

**Before connecting this unit to power and connecting or disconnecting any other cable, the protective earth terminals of this unit must be connected to the protective ground conductor of the mains (AC or DC) power cord. If you are using an extension cord (power cable) make sure it is grounded as well. Any interruption of the protective (grounding) conductor (inside or outside the instrument) or disconnecting of the protective earth terminal can make this unit dangerous. Intentional interruption is prohibited.**

### Connecting AC Power

AC power should be supplied through the 1.5m (5 ft) standard power cable terminated by a standard 3-prong plug. The cable is provided with the unit.

➤ **To connect AC power:**

1. Connect the power cable to the power connector on the ASMi-52L rear panel.
2. Connect the power cable to the mains outlet.

   The unit turns on automatically upon connection to the mains.

### Connecting DC Power

A special IEC 60320 adapter for -48/-60 VDC power connection is supplied with the unit.

➤ **To connect DC power:**

- Refer to the DC power supply connection supplements for instructions how to wire the DC adapters, and to the *Handling Energized Products* section.

# Chapter 3

# Operation

This chapter provides the following information for the ASMi-52L modem:

- ASMi-52L front-panel indicators
- ASMi-52L default settings.
- Configuration alternatives
- Operating procedures (turn-on and turn-off).

Installation procedures given in *Chapter 2* must be completed and checked before attempting to operate ASMi-52L.

## 3.1 Turning On the ASMi-52L

➤ **To turn on ASMi-52L:**

- Connect the power cord to the mains.

  The PWR indicator lights up and remains lit as long as ASMi-52L receives power.

ASMi-52L requires no operator attention once installed, with the exception of occasional monitoring of front panel indicators. Intervention is only required when ASMi-52L must be configured to its operational requirements, or diagnostic tests are performed.

## 3.2 Controls and Indicators

The front and rear panels of ASMi-52L include a series of LED indicators that show the current operating status of the unit.

*Figure 3-1* shows a front panel ASMi-52L unit in a plastic enclosure.

*Table 3-1* lists and describes the front panel indicators. *Table 3-2* lists and describes the rear panel indicators

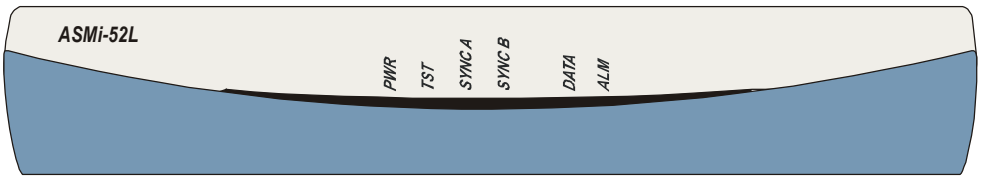


*Figure 3-1. Typical ASMi-52L Front Panel*

*Table 3-1. ASMi-52L Front Panel LEDs*

| Name | Function |
|---|---|
| PWR (green) | On – Power is ON |
| TST (red) | On – A loopback test is active in local or remote unit |
| SYNC A (red/green) | On (red) – Link A is not synchronized<br>On (green) – Link A is synchronized<br>Blinks – The line is connected properly and the synchronization process is taking place |
| SYNC B (red/green) | On (red) – Link B is not synchronized<br>On (green) – Link B is synchronized<br>Blinking – The line B is connected properly and the synchronization process is taking place |
| DATA (yellow) | Blinking – Data is being transferred |
| ALM (red) | On – An alarm enters the buffer of local or remote unit |

*Table 3-2. ASMi-52L Rear Panel LEDs (Ethernet Option)*

| Name | Function |
|---|---|
| ACT (yellow) | Blinks according to Ethernet traffic activity (10/100BaseT connector) |
| LINK (green) | On – Good link integrity (10/100BaseT connector) |

*Table 3-3* shows the normal status of the indicators a few seconds after the units are synchronized.

*Table 3-3. ASMi-52L Indicator Status*

| Indicator | Status |
|---|---|
| PWR | ON |
| TST | OFF |
| ALM | OFF |
| SYNC | ON (green) |

If the above LED indications do not appear following initial power turn-on, refer to *Chapter 6* for diagnostic test instructions.

## 3.3 Default Settings

ASMi-52L is managed by an ASCII terminal or PC running a terminal emulation program via menu-driven embedded software. *Table 3-4* lists the default settings of the ASMi-52L configuration parameters.

*Table 3-4. Default Settings*

| Parameter | Default Value |
|---|---|
| **System** | |
| Clock | Internal |
| Sys contact | – |
| Sys location | – |
| Sys name | – |
| Host IP address | 0.0.0.0 |
| Host IP mask | 0.0.0.0 |
| Host default gateway | 0.0.0.0 |
| Read community | public |
| Write community | public |
| Trap community | public |
| SNMP allowed | Access allowed |
| Telnet allowed | Access allowed |
| WEB allowed | Access allowed |
| LAN operation mode | Transparent |
| Encapsulation CRC | No |
| Bridging Mode | Access only |
| Aging Timeout | 10 |
| Autonegotiation | Enable |
| Max AutoNeg Capability | 100BaseT-full duplex mode |
| Control port rate | 9600 bps |
| Data | 8 |
| Parity | None |
| Interface | DCE |
| CTS | =RTS |
| DSR | ON |
| Port control mode | Terminal |
| User name | – |

| Parameter | Default Value |
|---|---|
| Password | 1234 |
| Pop alarm | OFF |
| Security timeout | 10 min |
| Call Out Mode | None |
| Number of retries | 1 |
| Wait for connect | 30 sec |
| Dial mode | Tone |
| Alternate number mode | Disable |
| Primary number | – |
| Alternate number | – |
| **SHDSL Interface** | |
| Transmission mode | Annex B |
| Power backoff | Enable |
| Snext margin | Disable |
| Current margin | Disable |
| Asym PSD | Symmetrical |
| Line prob | Fixed rate |
| ***Note**: ASMi-52L units with 4-wire line interface support only fixed rate.* | |
| Configured wire | 2-wire, for 2-wire products<br>4-wire, for 4-wire products |
| Loop attenuation threshold | 0 |
| SNR margin threshold | 0 |
| **Serial DTE Interface** | |
| Rate | 2-wire – 192 kbps<br>4-wire – 384 kbps |
| LLB from DTE | Disable |
| RLB from DTE | Disable |

## 3.4 Configuration Alternatives

If required, ASMi-52L can be reconfigured. The ASMi-52L configuration and monitoring operations are performed using any of the following tools:

- ASCII Terminal Connected to Supervisory Port (Command Line Interface or menu driven)
- ConfiguRAD, a Web-based management system, using a Web browser running on a PC connected to the network
- RADview, an SNMP based management system with a Graphical User Interface. See the RADview-MDM User's Manual, for details.

Detailed configuration procedures are given in *Chapter 4*.

The following functions are supported by the ASMi-52L management software*:*

- Viewing system information
- Modifying configuration and mode of operation, including setting system default values
- Monitoring ASMi-52L performance
- Initiating diagnostic tests
- Upgrading software.

### Configuring via a Terminal

➤ **To start a terminal control session:**

1. Make sure all ASMi-52L cables and connectors are properly connected.
2. Connect ASMi-52L to a PC equipped with an ASCII terminal emulation application (for example, Windows Hyper Terminal or Procomm).
3. Turn on the control terminal PC and set its port parameters to 9.6 kbps, 8 bits/character, 1 stop bit, no parity. Set the terminal emulator to ANSI VT100 emulation (for optimal view of system menus).
4. When the initialization and self-test are over, a menu appears displaying initialization and self-test results. If problems are encountered, refer to *Chapter 4* for instructions.

#### Login

➤ **To enter the user name and password:**

1. Type in your user name and press **<Tab>**.

***Note*** *The default user name is **su,** although you may leave the field blank, and the default password is **1234.***

2. Type in your password at the > prompt (up to eight characters).
   ASMi-52L responds to your entry with asterisks.
3. Press **<Enter>**.

### Choosing Options

➤ **To choose an option:**

- Type the number corresponding to the option, and press **<Enter>**.

  ASMi-52L immediately displays a new value or new menu for the selected option.

***Note*** *When a menu option has only two values, typing the option number and pressing **<Enter>** will toggle between the available values.*

### Navigating Tables

Some of the ASMi-52L management software screens are tables, which are larger than regular menus and require scrolling to navigate between parameters. For example, the Inventory screen or Manager List menu are considered tables.

Use the following keys (case-sensitive) for the table navigation:

- **L** – move left, **l** – scroll left,
- **R** – move right, **r** – scroll right
- **U** – move up, **u** – scroll up
- **D** – move down, **d** – scroll down
- **<Tab>** – select next changeable cell.

***Note*** *You can display these navigation keys by typing <**?**> from a table.*

### Saving Changes

➤ **To save changes in the configuration:**

- Type **S** to save the changes that were made to the ASMi-52L configuration.

### Logging Out

➤ **To end the current session:**

- In the Main menu, click **Logout** or type **&** in a terminal management screen.

## Configuring via Web Browser

### Web Browser Requirements

The following Web browsers can be used to access the ASMi-52L supervision utility from any location that enables access to the ASMi-52L using Internet protocols.

- Internet Explorer 6.0, running on Windows™ 98, Windows™ 2000, Windows™ XP
- Netscape Communicator 7.1, running on Windows™ NT or Unix.

***Note*** *Please enable pop-ups in your browser settings, if applicable.*

### Login

➤ **To login via Web browser:**

1. Connect one of the Ethernet ports of ASMi-52L to the LAN.

2. Open the Web browser.
3. Disable any pop-up blocking software, such as Google Popup Blocker.
4. Enter the IP address of the ASMi-52L in the address field of the browser in the following format: **http://'IP address'** and then press **<Enter>** to command the browser to connect (**'IP address'** stands for the actual ASMi-52L IP address which has to be assigned via an ASCII terminal).
5. After the opening window is displayed, click **LOGIN**.
6. Enter your user name and password.

   The Main menu is displayed.

### Navigating the ConfiguRAD Menus

ConfiguRAD is a Web-based remote access terminal management software. It provides a user-friendly interface for configuring, collecting statistics and performing diagnostic tests on the ASMi-52L units.

➤ **To choose an option:**

1. Click a link in the ConfiguRAD screen to display the next menu.
2. Once the target screen is displayed, select a value from the drop-down box or enter it in a text box.

At the left-hand bottom corner, ConfiguRAD provides some auxiliary management tools:

- Status – shows the number of users currently managing ASMi-52L
- Trace – opens an additional pane for system messages, progress indicators (ping, software and configuration file downloads) and alarms. It is recommended to keep the trace pane open all the time.
- Refresh All – refreshes performance registers.

## Configuring via RADview

The RADview ASMi-52L Element Manager main window provides a dynamically updated representation of ASMi-52L, allowing you to monitor and manage the ASMi-52L. The main window displays the device hardware configuration, showing the system and existing ports.

The following rows are displayed in the main window:

- System
- Network port
- User port

There are two levels of objects, System Level and Port Level:

1. System Level - This level contains all the parameters/functions common to the whole device. To manipulate the system level object, you must first select its row.
2. Port Level - This level contains all the parameters/functions of selected port. To manipulate a port level object, you must first select its row.

➤ **To configure ASMi-52L via RADview:**

1. Perform the preliminary ASMi-52L configuration steps, outlined in *Chapter 4*.
2. Ensure that there is proper network connectivity between the RADview Network Management Station (NMS) andASMi-52L.
3. From the RADview-MDM map, select the ASMi-52L node
4. From the Configuration menu, select **Element Manager** to zoom (open) the ASMi-52L application.

   While zooming the device, NMS will display the following message: "Connecting to agent…". Then the RADview ASMi-52L Element Manager window appears.

***Notes***

- *If there is no communications with the agent, the main window displays the last hardware configuration of the device. All buttons will be disabled except for <Close> and <Cancel>.*
- *Buttons vary, depending on the context.*
- *Depending upon the object selected, some menus may be unavailable.*

For further details, see the RADview-MDM User's Manual.

## Menu Structure

Use these menu maps as a reference aid while performing configuration and control functions. *Figure 3-2* shows the Inventory and Configuration menus, and *Figure 3-3* shows the Monitoring, Diagnostics and File Utilities menus.

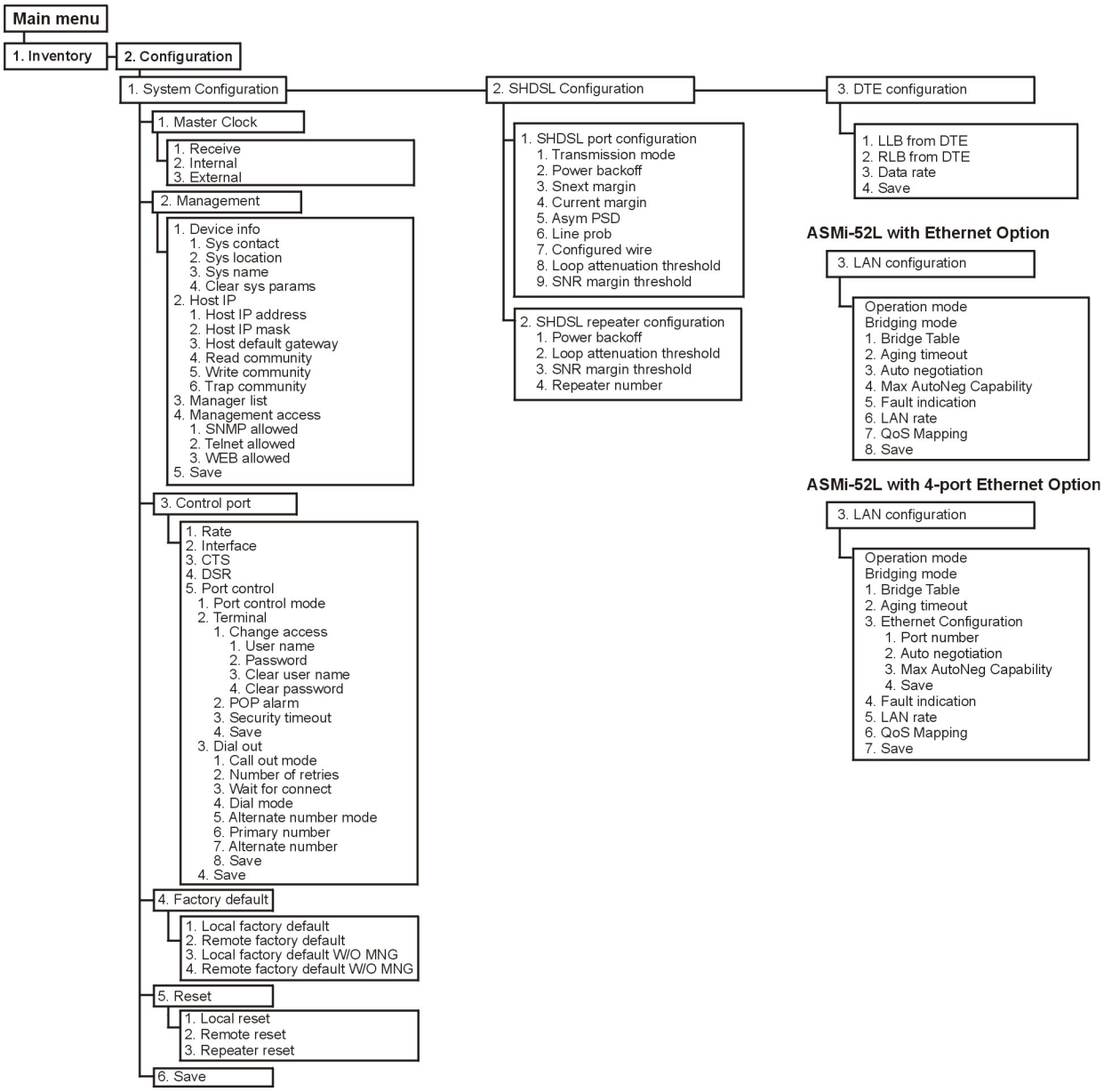


*Figure 3-2. Inventory and Configuration Menus*

***Notes***

*Management menu options depend on the type of the DTE interface installed:*

- *LAN Rate (**Main menu > Configuration > LAN Configuration**) is available for the units with the user 10/100BaseT port.*
- *Data Rate (**Main menu > Configuration > DTE Configuration**) is available for the units with a serial DTE interface.*
- *Figure 3-2 illustrates software menus of the unit that operates with SHDSL repeater in line.*

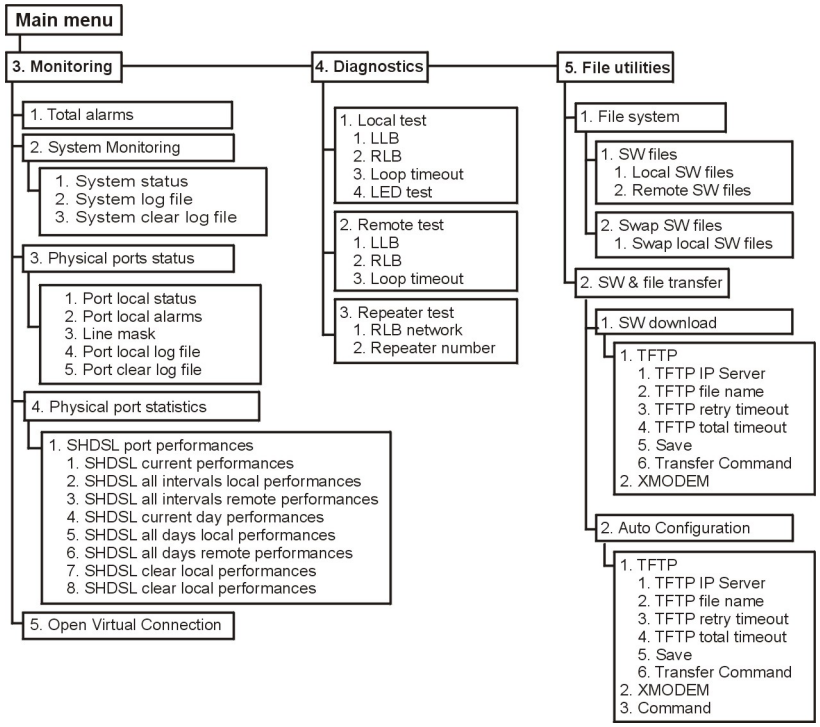


*Figure 3-3. Monitoring, Diagnostics and File Utilities Menus*

## 3.5 Turning Off ASMi-52L

➤ **To turn off ASMi-52L:**

- Remove the power cord from the power source.

# Chapter 4
# Configuration

The configuration of ASMi-52L is performed via menu-driven embedded software, using a standard ASCII terminal or a PC running a terminal emulation application connected to the rear panel CONTROL port. Alternatively, ASMi-52L can be managed from a Telnet host connected to the 10/100BASE-T port on the rear panel.

## 4.1 Configuring ASMi-52L for Management

This section describes how to prepare ASMi-52L and the supervisory terminal for a control session.

### Configuring Management Parameters

You must define the ASMi-52L internal SNMP agent parameters in order to enable SNMP and Telnet management (see *Figure 4-1*). Also you can enter additional information about your ASMi-52L, such as contact person, unit location etc.

➤ **To access the Management menu:**

- From the System Configuration menu, select **Management**.

  The Management menu appears (*Figure 4-1*).

```
                          ASMi-52L
Management
1. Device Info                          >
2. Host IP                              >
3. Manager List                         >
4. Management access                    >
5. MTU (64 - 1540)          ...(1540)
6. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-1. Management Menu*

#### Entering Device Information

The Device Information menu allows you to assign a name to ASMi-52L, define its location and contact person. These entries may include up to 20 characters.

➤ **To enter device information:**

1. From the Management menu, select **Device Info**.

The Device Info menu appears (see *Figure 4-2*).

2. From the Device Info menu, select **Sys Contact** and enter name of a contact person; select **Sys Location** and enter description of the ASMi-52L location; select **Sys Name** and enter a name of the unit.
3. Press **<Esc>** to return to the Management menu (see *Figure 4-1*).
4. From the Management menu, select **Save** to save your changes.

➤ **To clear system parameters:**

1. From the Device Info menu, select **Clear sys param**.

   ASMi-52L displays the following message:
   **Are you sure !!! Clear (Y/N)**

2. Type **Y** to confirm the deletion.

   ASMi-52L deletes all device info parameters.

```
                              ASMi-52L
Device Info
Sys description    ASMi-52L  HW Version: 0.00, SW Version: 1.00E54)
1. Sys contact                                ()
2. Sys location                               ()
3. Sys name                                   (ASMi-52L)
4. Clear sys params
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-2. Device Information Menu*

## Configuring the Host Parameters

ASMi-52L can be managed by a network management station, which is located on the LAN connected to the 10/100BaseT port. In order to establish a proper connection, it is necessary to configure the following: host IP address, subnet mask, default gateway, its trap, read and write communities.

➤ **To define the IP parameters:**

1. From the Management menu, select **Host IP**.

   The Host IP menu appears (see *Figure 4-3*).

2. From the Host IP menu, type the following:
   - **1** to define the host IP address
   - **2** to define the subnet mask
   - **3** to set the default gateway IP address
   - **4** to enter the name of a community with read-only authorization
   - **5** to enter the name of a community with write authorization
   - **6** to enter the name of a community to which ASMi-52L will send traps.
3. Press **<Enter>**.
4. Press **<Esc>** to return to the Management menu (see *Figure 4-1*).

5. From the Management menu, select **Save** to save your changes.

```
                          ASMi-52L
Host IP
1. Host IP address                  (0.0.0.0)
2. Host IP mask                     (255.255.255.0)
3. Host default gateway             (0.0.0.0)
4. Read community                   (public)
5. Write community                  (public)
6. Trap community                   (public)
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-3. Host IP Menu*

## Configuring the Network Managers

Define or modify the network management stations to which the SNMP agent of ASMi-52L will send traps. Up to ten managers can be defined. Entering the IP address and corresponding subnet mask defines each management station.

➤ **To configure the network managers:**

1. Display the **Manager List** menu. (Path: Main menu > Configuration > System Configuration > Management > Manager List)

   The Manager List menu appears (see *Figure 4-4*).

2. From the Manager List menu, type a number corresponding to network management station that you intent to define or modify, and enter its new IP address.
3. Type a number corresponding to a subnet mask of the already defined network management station, and enter a new value.
4. Repeat step 2 and step 3 to define additional management stations.
5. Press **<Esc>** to return to the Management menu (see *Figure 4-1*).
6. From the Management menu, select **Save** to save your changes.

```
                              ASMi-52L
Manager List
 1. MNG 1  IP   ... (0.0.0.0)    12. MNG 2  MASK   ... (0.0.0.0)
 2. MNG 2  IP   ... (0.0.0.0)    13. MNG 3  MASK   ... (0.0.0.0)
 3. MNG 3  IP   ... (0.0.0.0)    14. MNG 4  MASK   ... (0.0.0.0)
 4. MNG 4  IP   ... (0.0.0.0)    15. MNG 5  MASK   ... (0.0.0.0)
 5. MNG 5  IP   ... (0.0.0.0)    16. MNG 6  MASK   ... (0.0.0.0)
 6. MNG 6  IP   ... (0.0.0.0)    17. MNG 7  MASK   ... (0.0.0.0)
 7. MNG 7  IP   ... (0.0.0.0)    18. MNG 8  MASK   ... (0.0.0.0)
 8. MNG 8  IP   ... (0.0.0.0)    19. MNG 9  MASK   ... (0.0.0.0)
 9. MNG 9  IP   ... (0.0.0.0)    20. MNG 10 MASK   ... (0.0.0.0)
10. MNG 10 IP   ... (0.0.0.0)
11. MNG 1  MASK ... (0.0.0.0)
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-4. Manager List Menu*

## Controlling the Management Access

You can enable or disable access to the ASMi-52L management system via SNMP, Telnet or Web-based application (ConfiguRAD). By disabling SNMP or Telnet, you prevent unauthorized access to the system when security of the ASMi-52L IP address has been compromised. When SNMP, Telnet and Web access is disabled, ASMi-52L can be managed via an ASCII terminal only.

➤ **To define the management access method:**

1. From the Management menu, select **Management Access**.

   The Management Access menu appears (see *Figure 4-5*).

2. From the Management Access menu, select **SNMP Allowed** to enable SNMP access, select **TELNET Allowed** to enable Telnet access, or select **WEB Allowed** to enable management via Web browser.

   The access value toggles between **Access Allowed** and **No Access**.

***Note*** *Currently the SNMP Allowed parameter is permanently set to **Access Allowed**.*

3. Press **<Enter>** when a desired value is displayed.
4. Press **<Esc>** to return to the Management menu (see *Figure 4-1*).
5. From the Management menu, select **Save** to save your changes.

```
                                ASMi-52L
Management Access

1. SNMP allowed                    (access allowed)
2. TELNET allowed                  (access allowed)
3. WEB allowed                     (access allowed)
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-5. Management Access Menu*

## Managing ASMi-52L via Terminal Port

The word format consists of one stop bit, 8 data bits, and no parity.

The Main menu is displayed (see *Figure 4-6*).

```
                                ASMi-52L
Main Menu

1. Inventory
2. Configuration
3. Monitoring
4. Diagnostics
5. File Utilities

>

ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-6. Main Menu (Terminal Session)*

# 4.2 Configuring ASMi-52L System Parameters

This section describes the procedures for configuring system parameters of ASMi-52L.

➤ **To access the Configuration menu:**

- From the Main menu, select **Configuration**.

  The Configuration menu appears (see *Figure 4-7*).

```
                              ASMi-52L
Configuration >
1. System configuration >
2. SHDSL configuration >
3. DTE/LAN configuration

>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-7. Configuration Menu*

The ASMi-52L system configuration allows you to perform the following:

- Configuring master clock
- Defining management parameters (IP parameters, system information etc)
- Defining control port parameters
- Resetting ASMi-52L to the defaults
- Performing the overall reset of the device or resetting its SHDSL interface.

➤ **To display the System Configuration menu:**

- From the Configuration menu, select **System Configuration**.

  The System Configuration menu appears (see *Figure 4-8*).

```
                              ASMi-52L
System Configuration >
1.  Master clock              >(Internal)
2.  Management                 >
3.  Control port               >
4.  Factory default            >
5.  Reset                      >
6.  Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-8. System Configuration Menu*

## Configuring the Master Clock

ASMi-52L modems support receive, external and internal clock modes. However, in the Ethernet ASMi-52L versions the Internal clock mode is disabled.

When configured to the internal or external clock, ASMi-52L modem operates as an STU-C unit. When configured to the receive clock, ASMi-52L operates as an STU-R unit.

➤ **To configure the master clock:**

1. From the System Configuration menu, select **Master Clock**.

   The Master Clock menu appears (see *Figure 4-9*).

2. From the Master Clock menu, select the appropriate clock by choosing **Receive**, **Internal**, or **External**.

The System Configuration menu returns.

3. From the System Configuration menu, select **Save** to save the changes.

```
                              ASMi-52L
Master clock (Internal)
1. Receive
2. Internal
3. External
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-9. Master Clock Menu*

## Configuring Control Port Parameters

ASMi-52L embedded software enables you to configure the Control port parameters.

➤ **To access the Control port menu:**

- From the System Configuration menu, select **Control Port**.

  The Control Port menu appears (see *Figure 4-10*)

```
                              ASMi-52L
Control Port
1. Rate                        >(9600)
2. Interface                    (DCE)
3. CTS                          (=RTS)
4. DSR                          (DTR)
5. Port Control                >
6. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-10. Control Port Menu*

### Changing the Control Port Data Rate

The control port of ASMi-52L supports different data rates that can be configured via the Rate menu (see *Figure 4-11*).

➤ **To configure the control port data rate:**

1. From the Control Port menu, select **Rate**.

   The Rate menu appears (see *Figure 4-11*).

2. Select the terminal rate by typing the number corresponding to the desired value, and press **<Enter>**.

3. Select **Save** to save the changes.

```
                              ASMi-52L
Rate (9600 kbps)
1. 9600 kbps
2. 19200 kbps
3. 38400 kbps
4. 57600 kbps
5. 115200 kbps
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-11. Control Port Rate Menu*

### Selecting the Control Port Interface

➤ **To select the control port interface:**

1. From the Control Port menu, select **Interface** to choose the control port interface: **DCE** (direct connection to the terminal via a straight cable) or **DTE** (terminal connection via modem or data link).

   The display is refreshed and the new value appears.

2. Select **Save** to save the changes.

### Selecting the CTS State

➤ **To select the CTS state:**

1. From the Control Port menu, select **CTS** to choose the CTS state: **ON** (constantly ON) or **=RTS** (follows the RTS line).

   The display is refreshed and a new value appears.

2. Select **Save** to save the changes.

### Selecting the DSR State

➤ **To select the DSR state:**

1. From the Control Port menu, select **DSR** to choose the DSR state: **ON** (constantly ON) or **DTR** (follows the DTR line).

   The display is refreshed and a new value appears.

2. Select **Save** to save the changes.

## Changing the Terminal Parameters

The Port Control menu allows you to do the following:

- Setting port mode (terminal, dial out or SLIP)
- Managing user name and password
- Enabling or disabling pop-up alarms
- Defining security timeout
- Configuring dial-out parameters.

➤ **To access the Port Control menu:**

- **Path**: Main Menu > Configuration > Control Port > Port Control.

  The Port Control menu appears (see *Figure 4-12*).

```
                              ASMi-52L
Port Control
1. Port Control Mode                      > (Terminal)
2. Terminal                              >
3. Dial out                              >
4. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-12. Port Control Menu*

## Configuring Port Control Mode

CONTROL port of ASMi-52L operates in one of the following modes:

- Terminal – direct connection to the control terminal (DCE mode) or to modem (DTE mode)
- Dial-out – connection to dial-out modem for alarm reporting
- SLIP – connection to management station via Serial Line Internet Protocol.

***Note*** *Currently connection to ASMi-52L via SLIP is disabled.*

➤ **To configure port control mode:**

1. From the Port Control menu, select **Port Control**.
   The Port Control Mode menu appears (see *Figure 4-13*).

```
                              ASMi-52L
Port Control Mode (Terminal)
1. Terminal
2. Dial out
3. SLIP
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-13. Port Control Mode Menu*

2. From the Port Control Mode menu, select desired operation mode.
   The Port Control menu appears.
3. From the Port Control menu, select **Save** to save the change.

## Configuring Pop-up Alarms and Security Timeout

Pop-up alarms and security timeout are configured via Terminal menu.

➤ **To access Terminal menu:**

- From the Port Control menu, select **Terminal**.
  The Terminal menu appears (see *Figure 4-14*).

```
                          ASMi-52L
Terminal

1. Change access              >
2. POP ALARM                  (OFF)
3. Security timeout           (10 min)
4. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-14. Terminal Menu*

➤ **To enable or disable the pop-up alarms:**

When the pop-up function is enabled, ASMi-52L displays the active alarms at the bottom of the terminal screen. When the fault condition that caused the alarm is cleared, the alarm is removed from the screen

1. From the Terminal menu, select **Pop Alarm** to choose the pop-up alarms mode: **ON** (pop-up alarms are enabled) or **OFF** (pop-up alarms are disabled).

   The display is refreshed and the new value appears.

2. Select **Save** to save the changes.

➤ **To configure the security timeout:**

1. From the Terminal menu, select **Security Timeout** to configure the timeout: **FOREVER** (timeout is disabled) or **10 MIN** (idle disconnect time – 10 min).

   The display is refreshed and a new value appears.

2. Select **Save** to save the changes.

➤ **To change the dial-out parameters:**

When the CONTROL port is configured to the dial out mode, you must specify the dial-out parameters of the port. This enables ASMi-52L to build the call command that is sent to the dial-out modem. When connecting the dial-out modem, you must use a cross cable (see *Appendix A* for the cross cable pinout).
The modem connected to the CONTROL connector must be set up as follows (for convenience, the Hayes commands required to select the specified parameters are listed in brackets):

- Auto-answer mode (**`AT S0=1`** and **`AT S1=1`**)
- Call set up in response to the **`CONNECT`** string (**`AT X0`**)
- No echo (**`AT E0`**)
- Verbose mode (no codes, e.g., **`CONNECT`** string instead of **`0`**) (**`AT V1`**).

1. From the Port Control menu (see *Figure 4-12*), select **Dial out**.

   The Dial Out menu appears (see *Figure 4-15*).

2. From the Dial Out menu, type the following:
   - **1** to instruct ASMi-52L to report all alarms (**ALL**), only major ones (**MAJOR**), or disable alarm reporting (**NONE**).

- **2** to specify the number of dialing retries. **0**, no redialing attempts are made if the call is not established on the first attempt. **1**–**8**, if the call is not established on the first attempt, ASMi-52L makes the specified number of redials.

  This parameter applies to both primary and alternate numbers:

  - If the call is not established after dialing the primary directory number the specified number of times, ASMi-52L attempts to establish the call by dialing the alternate directory number (provided the use of an alternate number is enabled).
  - If the call cannot be established within the specified number of redialing attempts on neither of the two directory numbers, ASMi-52L stops the call attempts. When a new alarm report must be sent, the call attempts are started again. The user is notified that the call attempts failed by a message recorded in the alarm log file (separate messages are provided for each directory number).
- **3** to specify the time (in sec) ASMi-52L waits for an answer after each dialing attempt. If the called station does not answer within the specified time, ASMi-52L disconnects. If additional call attempts are allowed, ASMi-52L redials immediately after disconnecting. The available selections are **30**, **45**, or **60** seconds.
- **4** to select the dialing mode. **TONE**, the dial-out modem is instructed to use DTMF dialing. **PULSE**, the dial-out modem is instructed to use pulse dialing.
- **5** to control the use of an alternate number. The alternate number is dialed after the specified number of call attempts on the primary number failed. **ENABLE**, the use of an alternate number is enabled. **DISABLE**, ASMi-52L stops the call attempts after the specified number of call attempts on the primary number failed.
- **6** to specify a primary number to dial.
- **7** specify an alternate number to dial.

3. Select **Save** to save the changes.

```
                              ASMi-52L
Dial out
1. Call Out Mode                      (None)
2. Number of Retries [0-8]            (1)
3. Wait for connect                   (30 sec)
4. Dial mode                          (Tone)
5. Alternate number mode              (Disable)
6. Primary number                     ()
7. Alternate number                   ()
8. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-15. Control Port Dial Out Menu*

## 4.3 Configuring the Physical Ports

The SHDSL and DTE or LAN interfaces of the ASMi-52L modem are configured via the Configuration menu. In addition, the SHDSL Configuration menu allows you to configure the SHDSL repeaters (if they are installed in line).

***Note*** *The third line of the Configuration menu changes according to the DTE interface installed in ASMi-52L. The possible options are:*

- *DTE Configuration for ASMi-52L units with a serial interface (V.35, X.21)*
- *LAN Configuration for ASMi-52L units with 10/100BaseT user interfaces.*

## Configuring the SHDSL Interface

The SHDSL interface is configured via the SHDSL Configuration menu, *Figure 4-16*.

```
                          ASMi-52L
SHDSL configuration
1. Transmission mode                          (Annex B)
2. Power backoff                              (Enable)
3. Snext margin                               (Disable)
4. Current margin                             (Disable)
5. Asym PSD                                   (Symmetrical)
6. Line prob                                  (Adaptive rate)
7. Configured wire                            (2W)
8. Loop attenuation threshold (dB) [0-127]    (0)
9. SNR margin threshold (dB) [0-15]           (0)
10.   Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-16. SHDSL Port Configuration Menu*

***Notes***

- *After changing the Configured Wire option, ASMi-52L must be reset to implement the change.*
- *When operating in Line prob. Adaptive rate, and the clock is internal, the rate is limited up to 2048 bps.*

### Configuring the Transmission Mode

The ASMi-52L configuration software allows you to change the modem's transmission mode (Annex A or Annex B). Examples given below illustrate the local device configuration procedures.

➤ **To change the transmission mode:**

1. Follow the path: Configuration > SHDSL Configuration > SHDSL Port Configuration >**Transmission Mode**
2. Select transmission mode: Annex A or Annex B.
3. Select **Save** to save the changes.

***Note*** *ASMi-52L units operating in the receive clock mode automatically detect standard compatibility value of the central units and configure themselves accordingly.*

## Configuring the Power Backoff

You can determine if the transmitted power backoff is used.

➤ **To configure the use of the power backoff:**

1. From the SHDSL Configuration menu, select **SHDSL Port Configuration**.
   SHDSL Port Configuration menu appears.
2. Select **Power backoff** to enable or disable power backoff.
   The display is refreshed and a new value appears.
3. Select **Save** to save the changes.

## Configuring the Snext Margin

The Snext margin indicates the minimum desired target margin with a worst-case self next noise model given current loop insertion (49 SHDSL next is considered the worst case). This setting is available only if the rate adaptation is enabled (see the line probing configuration below).

***Note*** *Disabling the Snext margin parameter allows the use of all line rates, regardless of line condition.*

➤ **To configure the Snext margin:**

1. From the SHDSL Port Configuration menu, select **Snext margin.**
   The Snext Margin menu appears (see *Figure 4-17*).
2. Select the Snext margin by typing the number corresponding to the desired value.
   SHDSL Port Configuration menu appears.
3. Select **Save** to save the changes.

```
                              ASMi-52L
Snext margin (Disable Snext margin)
1.   -10                  12.     1
2.   -9                   13.     2
3.   -8                   14.     3
4.   -7                   15.     4
5.   -6                   16.     5
6.   -5                   17.     6
7.   -4                   18.     7
8.   -3                   19.     8
9.   -2                   20.     9
10.  -1                   21.     10
11.  0                    22.     Disable Snext margin
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-17. Snext Margin Menu*

## Configuring the Current Margin

The current margin indicates the minimum desired target margin for the local line conditions during the startup sequence. This setting is available only if the rate adaptation is enabled (see the line probing configuration below).

***Note*** *Disabling the current margin parameter allows the use of all line rates, regardless of line condition.*

➤ **To configure the current margin:**

1. From the SHDSL Port Configuration menu, select **Current margin.**

   The Current Margin menu appears. The display is identical to the Snext Margin menu, except for its title (see *Figure 4-17*).

2. Select the current margin by typing the number corresponding to the desired value, and press **<Enter>**.

   SHDSL Port Configuration menu appears.

3. Select **Save** to save the changes.

## Configuring the Power Spectral Density

By configuring the power spectral density, you define the amount of power applied to the spectrum of frequencies that carry the information signal in order to achieve a satisfactory level of signal strength at the receiving end of the circuit.

The power spectral density can be configured for the ASMi-52L units with the line probing set to fixed.

The power spectral density value depends on the selected modems compatibility: Annex A or Annex B. The possible values are:

- Symmetric, supported in both Annex A and Annex B modes.
- Asymmetric, supported in Annex A at 768 kbps and in Annex B at 2048 kbps.

➤ **To configure the power spectral density:**

1. From the SHDSL Port Configuration menu, select **Asym PSD** to choose the power spectral density value: symmetrical or asymmetrical**.**

   The display is refreshed and a new value appears.

2. Select **Save** to save the changes.

***Note*** *Remote ASMi-52L units automatically detect the line power density. This parameter is permanently set to Sym/Asym Enable and cannot be changed.*

## Configuring the Line Probing

By configuring this parameter, you force ASMi-52L to perform line probing in order to find the best possible rate of transmission – adaptive rate. Or you command the modem to skip the rate adaptation phase – fixed rate.

Only central ASMi-52L units with the 2-wire line interface support fixed and adaptive rates, remote units operate with adaptive rate only.

ASMi-52L units with the 4-wire line interface support only fixed rate.

➤ **To configure the line probing:**

1. From the SHDSL Port Configuration menu, select **Line Prob**.
   The display is refreshed and a new value appears.
2. Select **Save** to save the changes.

### Configuring the Line Interface Type

You can configure the ASMi-52L units with 4-wire interface to operate over 2-wire lines. Selecting the 2-wire operation mode disables pin 1 and pin 2 of the RJ-45 line connector.

➤ **To configure the line interface type for ASMi-52L units:**

1. From the SHDSL Port Configuration menu, select **Configured wire**
   The display is refreshed and a new value appears (**2W** or **4W**).
2. Select **Save** to save the changes
3. Reset ASMi-52L in order to active the change.

### Setting the Loop Attenuation Threshold

Loop attenuation is difference (in dB) between the power transmitted from the ASMi-52L modem and the power received by the unit operating at the other side of the application. By setting the threshold, you instruct the modem to generate minor alarm (LOOP ATTN. OVER LINE A/B), if selected loop attenuation threshold value is exceeded.

➤ **To set the loop attenuation threshold:**

1. From the SHDSL Port Configuration menu, select **Loop attenuation threshold**.
2. Enter the desired value (**0 dB** to **127 dB**).
3. Select **Save** to save the changes.

### Setting the SNR Margin Threshold

You can set signal-to-noise ratio threshold. ASMi-52L generates minor alarm (SNR MARGIN OVER LINE A/B), if the signal-to-noise ratio on the line exceeds the threshold value.

➤ **To set the SNR margin threshold:**

1. From the SHDSL Port Configuration menu, select **SNR margin threshold**.
2. Enter the desired value (**0 dB** to **15 dB**).
3. Select **Save** to save the changes.

### Configuring the SHDSL Repeater

Configuration parameters of the SHDSL repeaters are similar to those of the SHDSL device, except for the following:

- Selecting repeater that you intend to configure
- Selecting power backoff for the customer and network sides of the repeater.

The SHDSL repeaters are configured via the SHDSL Repeater Configuration menu.

➤ **To access the SHDSL Repeater Configuration menu:**

- From the SHDSL Configuration menu (Configuration > Physical Ports Configuration > SHDSL Configuration menu), select SHDSL repeater configuration.

  The SHDSL Repeater Configuration menu is displayed (see *Figure 4-18*).

```
                              ASMi-52L
SHDSL repeater configuration
1. Power backoff                                    (Disable)
2. Loop Attenuation threshold (dB)[0 - 127]         (0)
3. SNR margin threshold (dB)[0 – 15]                (0)
4. Repeater number                               >   (1)
5. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-18. SHDSL Repeater Configuration Menu*

## Configuring the Serial DTE Interface

If the ASMi-52L modem is equipped with a serial data interface, the configuration software allows you to enable/disable the LLB/RLB activation from the DTE (except for X.21) and select the modem's data rate.

### Configuring LLB/RLB Activation from the DTE

➤ **To enable/disable the LLB/RLB activation from the DTE:**

1. From the Physical Ports Configuration menu, select **DTE Configuration**.

   The DTE Configuration menu appears (see *Figure 4-19*).

2. Select **DTE local port configuration** to configure the local DTE port or select **DTE remote port configuration** for the remote port configuration.

   DTE Local/Remote Port Configuration menu appears (see *Figure 4-20*).

3. From the DTE Local/Remote Port Configuration menu, select **LLB from DTE** to enable the LLB activation from the DTE or select RLB from DTE to enable the RLB activation from the DTE.

   The display is refreshed and a new value appears.

4. Select **Save** to save the changes.

```
                              ASMi-52L
DTE configuration >
  Port number:                (1)
1. DTE local port configuration
2. DTE remote port configuration
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-19. DTE Configuration Menu*

```
                              ASMi-52L
DTE local port configuration >
1. LLB from DTE :      (Disable)
2. RLB from DTE :      (Disable)
3. Data rate > >       (192 Kbps)
4. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-20. DTE Local Port Configuration Menu*

## Configuring the Data Rate

ASMi-52L supports multiple data rates in the range between 64 kbps and 4608 kbps, depending on the clock mode and line/DTE interface of the local and remote units (see *Table 1-2* and *Table 1-3*).

➤ **To select the data rate:**

1. From the DTE Port Configuration menu, select **Data Rate**.

   The Data Rate menu appears (see *Figure 4-21*). The ASMi-52L screen in *Figure 4-21* is with a 2-wire, external clock configuration.

2. Select the data rate by typing the number corresponding to the desired value, and press **<Enter>**.

   The DTE Port Configuration menu appears.

3. Select **Save** to save the changes.

```
                              ASMi-52L
Data Rate (384 Kbps)
 1. 64 Kbps          13. 832 Kbps        25. 1600 Kbps
 2. 128 Kbps         14. 896 Kbps        26. 1664 Kbps
 3. 192 Kbps         15. 960 Kbps        27. 1728 Kbps
 4. 256 Kbps         16. 1024 Kbps       28. 1792 Kbps
 5. 320 Kbps         17. 1088 Kbps       29. 1856 Kbps
 6. 384 Kbps         18. 1152 Kbps       30. 1920 Kbps
 7. 448 Kbps         19. 1216 Kbps       31. 1984 Kbps
 8. 512 Kbps         20. 1280 Kbps       32. 2048 Kbps
 9. 576 Kbps         21. 1344 Kbps       33. 2304 Kbps
10. 640 Kbps         22. 1408 Kbps
11. 704 Kbps         23. 1472 Kbps
12. 768 Kbps         24. 1536 Kbps
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-21. Typical Data Rate Menu*

## Configuring the LAN Port

An ASMi-52L unit fitted with a 10/100BaseT port can be used as a user or management port. The LAN port operates in a self-learning bridge mode, with or without autonegotiation.

### Configuring LAN Port Operation Mode

In the transparent mode the LAN port operates with disabled filter, passing all frames transparently. When operating as a self-learning bridge, the LAN port filters the packets received from the local LAN and transfers through the link only frames destined to another LAN.

➤ **To configure the LAN operation mode:**

1. From the Configuration menu, select **LAN Configuration**.

   The LAN Configuration menu appears (see *Figure 4-22*).

2. From the LAN Configuration menu, select **Operation Mode**.

   The Operation Mode menu appears.

3. From the Operation Mode menu, select **Transparent** to enable transparent mode, or select **Bridge** to enable bridge mode.

***Note*** *For modems with the 10/100BaseT user LAN interface, the default is **Bridge**.*

   The LAN Configuration menu appears.

4. From the LAN Configuration menu, select **Save** to save your changes.

```
                              ASMi-52L
LAN Configuration

Operation Mode                          (Bridge)
Bridging Mode                           (Switching)
1. Bridge Table                         []>
2. Aging Timeout(sec)[10 - 1000000]     (10)
3. Auto negotiation                     (Enable)
4. Max AutoNeg Capability               (100BASE_T-full duplex mode)
5. Fault indication                     (Yes)
6. LAN rate                             (2304)
7. QoS Mapping (Classification 802.1p) <
8. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-22. LAN Configuration Menu, (one Ethernet port)*

***Note*** *The 4-Ethernet port ASMi-52L has a different LAN configuration menu. Items 3 and 4 are in the Ethernet Configuration sub-menu.*

### Filling the Bridge Table

When the 10/100BaseT port operates in the bridge mode, you can assign MAC addresses to the local or remote LAN.

➤ **To fill the bridge table:**

1. From the LAN Configuration menu, select **Bridge Table**.

   The Bridge Table appears (see *Figure 4-23*).

```
                              ASMi-52L
Bridge Table
MAC Address                Port                Type
1. 0010b340500             LAN                 Static
2. 0040e108070             DSL                 Static
3. 00000000000                                 Static
>
ESC-prev.menu; !-main menu; &-exit; ?-help
```

*Figure 4-23. Bridge Static Table, Normal Mode*

2. From the Bridge Table, select an empty cell (the one with MAC address 0000000000 and unassigned port) by typing **D** to move the cursor down or **U** to move it up.

   You can also select an existing MAC address to reassign it.

3. Once the MAC address is selected, type **m** to enable editing mode.

   The Bridge Table enters editing mode (see *Figure 4-24*).

4. In the editing mode, select **MAC Address** and enter a MAC address value.
5. Select **Port** and assign the current MAC address to the local LAN by entering **LAN** or to remote LAN by entering **DSL**.
6. Select **Save All** to save the changes.
7. Press **<Esc>** to exit the editing mode.

➤ **To remove MAC address from the table:**

1. From the Bridge Table, select MAC address that you intend to remove from the static table.
2. Enter editing mode, as explained above.
3. Enter all zeros for the MAC address value and save the change.

```
                              ASMi-52L
Bridge Table
        Type            (Static)
1.    MAC Address ...   (00000000000)
2.    Port        ...   ()
>
ESC-prev.menu; !-main menu; &-exit; ?-help
```

*Figure 4-24. Bridge Table, Editing Mode*

## Configuring Aging Timeout

The aging time is the timeout period in seconds for aging out dynamically learned forwarding information. When the timeout period is over, the bridge removes all inactive nodes from its database.

➤ **To configure aging timeout:**

1. From the LAN Configuration menu, select **Aging Timeout**.
2. Enter a new aging timeout value in seconds and press **<Enter>**.
3. Select **Save** to save the change.

## Setting the LAN Rate

When the LAN port of ASMi-52L is used for the DTE connection, the DTE rate is configured via the LAN rate menu. The LAN rate depends on the line interface (2-wire or 4-wire).

***Note*** *ASMi-52L units operating in the receive clock mode automatically detect LAN rate of the central units and configure themselves accordingly.*

➤ **To set the LAN rate:**

1. From the LAN Configuration menu, select **LAN Rate**.
   The LAN Rate menu appears (see *Figure 4-25*).
2. From the LAN Rate menu, select the desired data rate.
   The LAN Configuration menu appears.
3. From the LAN Configuration menu, select **Save** to save the new value.

```
                              ASMi-52L
Data Rate (2304 Kbps)
1. 64 Kbps       8.   768 Kbps
2. 128 Kbps      9.   1024 Kbps
3. 192 Kbps      10.  1152 Kbps
4. 256 Kbps      11.  1536 Kbps
5. 384 Kbps      12.  2048 Kbps
6. 512 Kbps      13.  2304 Kbps
7. 576 Kbps
>

ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-25. LAN Rate Menu (2-WireVersion)*

## Configuring Autonegotiation

ASMi-52L autonegotiation allows you to operate at the fastest data rate available. With autonegotiation enabled, the ASMi-52L unit automatically determines between itself and the DTE the fastest data rate and duplex mode that they can operate. With autonegotiation disabled, the LAN interface of ASMi-52L operates at the speed and duplex mode that is configured by the Max AutoNeg capability.

***Notes***

- *In 4-Ethernet port ASMi-52L units, Autonegotiation and Max AutoNeg capability are located in the Ethernet Configuration sub-menu.*
- *Autonegotiation and Max AutoNeg capability must be defined for each Ethernet port.*

For 4-port Ethernet ASMi-52L units each port must be defined separately.

➤ **To set the Ethernet Port Number**

1. Follow the path: Configuration > LAN Configuration > Ethernet Configuration
   The Ethernet Configuration menu appears (see *Figure 4-26*).
2. Set the port number to be defined.
3. Set Autonegotiation and Max Autonegotiation Capability as defined below.
4. Repeat for all the Ethernet ports

```
                              ASMi-52L
Lan local configuration>ETH Configuration

 1. Port number                  >   (1)
 2. Auto negotiation                 (ENABLE)
 3. Max AutoNeg Capability       >   (100BASE_T-full duplex mode)
 4. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll            1 user(s)
```

*Figure 4-26. 4-Ethernet Port LAN Ethernet Configuration Menu*

➤ **To set the autonegotiation:**

1. Follow the path depending on your ASMi-52L unit:
   - 1-Ethernet Port: Configuration > LAN Configuration >**Autonegotiation**
     Toggle between **Enable** and **Disable**.
   - 4- Ethernet Port: Configuration > LAN Configuration > Ethernet Configuration > **Autonegotiation**.
2. If the autonegotiation is enabled, select **Max AutoNeg Capability**.
   The Set Capability menu appears.
3. Select the desired LAN operation mode by choosing one of the following:
   - 10BaseT half duplex
   - 10BaseT full duplex
   - 100BaseT half duplex
   - 100BaseT full duplex.
4. If the autonegotiation is disabled, choose **Default Type** from the LAN Configuration menu.
   The Set Default menu appears.
5. Select the desired LAN operation mode by choosing one of the following:
   - 10BaseT half duplex

- 10BaseT full duplex
- 100BaseT half duplex
- 100BaseT full duplex.

6. From the LAN Configuration menu, select **Save**.

### Configuring Fault Indication

If ASMi-52L fault indication is enabled and a fault condition or loss of signal is detected on the line, the Ethernet link is disconnected by ASMi-52L. If fault indication is not selected, fault conditions are not passed through to the LAN side.

➤ **To set the fault indication:**

1. From the LAN Configuration menu, select fault indication.
   Toggle between Yes and No.
2. Select **Save** to save your changes

## 4.4 Displaying the ASMi-52L Status

The ASMi-52L software allows you to display the modem system and physical port information.

The status information is available via the Monitoring menu.

➤ **To access the Monitoring menu:**

- From the Main menu, select **Monitoring**.
  The Monitoring menu appears (see *Figure 4-27*).

```
                          ASMi-52L
Monitoring
1. Total Alarms                          []>
2. System monitoring                     >
3. Physical ports status                 >
4. Physical ports statistics
5. Open Virtual Connection

>
ESC-prev.menu; !-main menu; &-exit;
```

*Figure 4-27. Monitoring Menu*

### Displaying the System Status

➤ **To display the system information:**

- Follow the path: Monitoring >System monitoring > **System status**)
  The System Status screen appears (see *Figure 4-28*).

```
                                    ASMi-52L
System Status
                      Local                                Remote
  Device Type         ASMi52_SA_L(PLASTIC)                 ASMi52_SA_L(PLASTIC
  SHDSL Mode          STU_C - 4W                           STU_R - 4W
  Clock Source        INT                                  RCV
  Software Version    1.00e06                              1.00e06
  Hardware Version    0.00                                 0.00
  FPGA Version        0.01                                 0.01
  Hardware Status     NO HARDWARE FAILURE                  NO HARDWARE FAILURE
  PS                  48-60VDC/100-240VAC                  48-60VDC/100-240VAC
  MAC address         00 20 d2 23 29 1b                    00 20 d2 23 29 2a
  IP address          172.17.161.73                        172.17.161.75
  Alarm Indication    MAJOR                                MAJOR
  Test Indication     OFF                                  OFF
>
ESC-prev.menu; !-main menu; &-exit; @-scroll; ?-help                    1 user(s)
```

*Figure 4-28. System Status Screen*

***Note*** *Alarms are described in Chapter 5.*

## Displaying the Port Status

➤ **To display the port status information:**

1. Follow the path: Monitoring > **Physical Port Status**
   The Physical Port Status menu appears.
2. From the Physical Port Status menu, select **Port Status** to display the port status.
   The Port Status screen appears (see *Figure 4-29*).
3. Type N to display the next page.

```
                                    ASMi-52L
Port local status
 SHDSL           (Standard ANNEX A, 2W)     (Standard ANNEX A, 2W)
 SHDSL Line      (Status:NOT SYNC, State: IDLE) (Status:NOT SYNC, State: IDLE)
 Framer Type     (SLOTTED T1)               (SLOTTED T1)
 EOC compatible  (STANDARD)                 (STANDARD)
 Actual PSD      (PSD UNKNOWN)              (PSD UNKNOWN)
 Line rate       (not applicable)           (not applicable)
 T1 interface    (IR-G704/BAL 1536 kbps)    (IR-G704/BAL 1536 kbps))
  HW status      (NO HARDWARE FAILURE)      (NO HARDWARE FAILURE)
  Test status    (NONE)>                    (NONE)>
(N)
ESC-prev.menu; !-main menu; &-exit;
```

*Figure 4-29. Port Status Screen*

***Note*** *The physical port alarms are described in Chapter 6.*

## 4.5 Additional Tasks

### Accessing the Remote ASMi-52L

Accessing the remote ASMi-52L is performed using a virtual connection with your terminal physically connected to the local unit.

➤ **To access the remote ASMi-52L**

1. From the Monitoring menu (*Figure 4-27*), select **Open Virtual Connection**
2. The Login screen of the second ASMi-52L appears.
3. Login to the second ASMi-52L

   You now have access to the second ASMi-52L menus.

***Note*** *If no key press is sensed for a period of 10 minutes, the virtual connection closes and you are returned to the initial ASMi-52L.*

➤ **To close a virtual terminal**

- From the Monitoring menu (of the second ASMi-52L), select **Close Virtual Connection**

  The Main menu of the first ASMi-52L is displayed.

### Changing the Password

User name and password are configured via the Terminal menu.

```
                              ASMi-52L
Terminal
1. Change access                          >
2. POP ALARM  (OFF)
3. Security timeout                       (10 min)
4. Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-30. Terminal Menu*

➤ **To change the user name and password:**

1. Follow the path: Configuration > System Configuration > Control Port > Port Control > Terminal > **Change Access**.

   The Change Access dialog appears:

```
                              ASMi-52L
Change Access
1. User name  ...()
2. Password   ...
3. Clear User Name                        ...
4. Clear Password                         ...
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

2. Select **User Name** to enter a new user name, select **Password** to enter a new password, select **Clear User Name** to delete the current user, or **Clear User Name** to delete the current password.
3. Enter a new user name or password and press **<Enter>**.

   The Terminal menu appears.
4. From the Terminal menu, select **Save** to save the changes.

## Displaying the ASMi-52L Inventory

The ASMi-52L inventory displays information on the functional blocks of the local or remote modem.

ASMi-52L consists of the following components:

- SHDSL unit
- DTE unit
- Terminal control port
- 10/100BASE-T port
- Power supply.

➤ **To display the ASMi-52L inventory:**

1. From the Main menu, select **Inventory**.

   The Inventory screen appears (see *Figure 4-31*).
2. Use the following keys to move around the indexes.

- **L** – move left, **l** – scroll left,
- **R** – move right, **r** – scroll right
- **U** – move up, **u** – scroll up
- **D** – move down, **d** – scroll down
- **<Tab>** – select next changeable cell.

```
                              ASMi-52L
Inventory
   1
   Index                1001
   Description          RAD-local ASMi-52_SA_L shdsl modem
   Vendor type
   Contained in         0
   Class                3
   Rel pos              0
   Name                 shdsl modem
   HW ver               0.00
   SW ver               1.00B1
      ->>
>
ESC-prev.menu; !-main menu; &-exit; @-scroll; ?-help
```

*Figure 4-31. Typical Inventory Screen*

## Updating Software Releases

This section presents procedures for installing new software releases into the ASMi-52L units, as well as swapping existing software versions in a local or remote unit.

ASMi-52L stores two software versions, each of them in one of the two 512-byte partitions of its flash memory, which also contains a boot program. The software is stored in compressed format. The active version is decompressed and loaded into the ASMi-52L RAM upon power-up. The passive software is kept for the backup purposes. By default, ASMi-52L is delivered with the active software only.

The new software releases are distributed on diskettes as an ***.img** file, which is downloaded to the local ASMi-52L using the TFTP or XMODEM protocol. Upon downloading, the new software release becomes active, the former active software turns into backup, and the former backup is erased.

If a failure occurs during downloading or decompression, the new version is erased from the flash and the backup version becomes active. In this case, only one version is left stored in the flash memory. If active software becomes corrupted, you can replace it with the backup one.

### Installing a New Software Release via TFTP

➤ **To install a new software release via TFTP:**

1. Display the TFTP menu (*Figure 4-32*) (Main menu > File Utilities S&W & File Transfer > TFTP)

```
                              ASMi-52L
TFTP
TFTP status                   (No operation)
TFTP error                    (No error)
1. TFTP IP server             (0.0.0.0)
2. TFTP file name             (asmi52.img)
3. TFTP retry timeout         (15)
4. TFTP total timeout         (60)
5. Save
6. Transfer command
>
ESC - prev. menu ; ! - main menu ; & - exit
```

*Figure 4-32. TFTP Menu*

2. From the TFTP menu, perform the following steps:
   - Select **TFTP IP Server** and enter the IP address of the TFTP server
   - Select **TFTP File Name** and enter the name of the software file (for example, **asmi52.img**).
   - Select **TFTP Retry Timeout** and specify intervals between connection retries (in seconds).
   - Select **TFTP Total Timeout** and specify the TFTP connection timeout (in seconds).
   - Select **Save** to save the TFTP configuration.
   - Select Transfer Command to start downloading file to ASMi-52L.

     ASMi-52L automatically erases the backup partition. Once the downloading is completed, ASMi-52L saves the new release as an active partition, the former active partition becomes backup.

     Once the downloading is complete, ASMi-52L decompresses the release file, displaying the following message:

     **`Final process download. Reset`**

     After the decompression, ASMi-52L saves the new release as an active partition, the former active partition becomes backup. Then the unit resets itself. This causes the new software to be loaded into the modem's RAM.

## Installing a New Software Release via XMODEM

***Notes***

- *Installation of the new software releases via XMODEM is not possible over Telnet.*
- *To minimize the software downloading time, it is recommended to configure the CONTROL port to the highest available data rate, see Changing the Control Port Data Rate section above.*

➤ **To install a new software release via XMODEM:**

1. Follow the path: Main menu > File Utilities S&W & File Transfer > XMODEM.

   ASMi-52L responds with the following string:

   **`PLEASE OPEN XMODEM APPLICATION.`**

   **`For exit press Q(uit)`**

If you press **<Q>**, ASMi-52L aborts the download process and displays **`Download failure. Press Esc to continue.`** message in addition to the previous display.

***Note***

*During the software installation, the TST indicator blinks.*

2. Send the ***.img** file to ASMi-52L using the XMODEM protocol of your terminal application.

   Once the downloading is complete, ASMi-52L decompresses the release file, displaying the following message:

   **`Final process download. Reset device after 5 seconds`**

   After the decompression, ASMi-52L is automatically reset. This causes the new software to be loaded into the modem's RAM.

## Displaying the Software Version

You can display the information on the software revision of the local or remote modem. The information includes a description of the active program, which is currently being used by ASMi-52L, and also details on the passive software kept for the backup purposes.

➤ **To display the software version:**

1. From the SW Files menu, (File Utilities menu > File System > SW files), select **Local SW Files** to display software revision of the local ASMi-52L, or select **Remote SW Files** to display software revision of the remote device.

   The Local or Remote Software Version screen appears (see *Figure 4-33*).

```
SW files
Software active version:        1.00A05
Software active partition:      0
Code size:                      683027
Date:                           17-7-3

Software backup version:        0.00n00
Software backup partition:      1
Code size:                      0
Date:                           0-0-0

Boot version:                   1.20
Boot mng version:               6.00

Press any key to continue...

ESC-prev.menu; !-main menu; &-exit
```

*Figure 4-33. Local Software Version Screen*

## Switching the Software Versions

If an active software becomes corrupted, you can switch it with the backup in the local ASMi-52L units.

➤ **To swap software versions:**

1. Follow the path: File Utilities menu > File System > Swap SW files.

   The Swap SW Files menu appears.

2. From the Swap SW Files menu, select **Swap Local SW Files** to switch files in the local ASMi-52L.

   ASMi-52L displays the following message:
   **`Request to swap SW files!!! Confirm Y/N`**

3. Type **Y** to confirm the file swap.

   ASMi-52L performs the swap and sends the following string:

   **`Program Switching`**

   Active software becomes backup and vice versa. At this stage, ASMi-52L is automatically reset.

   If you try to switch the software versions when only one version is available, ASMi-52L responds with the following message:

   **`Impossible to switch – no other program`**

   **`Press any key to continue`**

## Performing Automatic Configuration

The ASMi-52L configuration can be uploaded or downloaded to and from other units. The configuration must be for like versions only.

A full download option is available which overwrites the IP addresses and the system details such as contact name, or a partial download where the above details are left intact, and only the system configuration is downloaded.

➤ **To upload configuration:**

1. Follow the path: File Utilities > SW Download > Auto Configuration > **Command**
2. Select Upload.

➤ **To download configuration:**

1. Follow the path: File Utilities > SW Download > Auto Configuration > **Command**
2. Select one of the following:
   - Download Full for a full download of the ASMi-52L configuration including system parameters.
   - Download Partial for a download of the configuration only.

## Resetting ASMi-52L

ASMi-52L supports four types of reset:

- Reset to the default setting
- SHDSL interface reset
- SHDSL repeater line reset.
- Overall reset

### Resetting to Default Settings

You can reset the local or remote ASMi-52L to default settings. Resetting to the factory default does not affect the master clock setting. In addition, you can reset the local ASMi-52L without affecting its management parameters (IP address, mask and default gateway).

➤ **To reset ASMi-52L to the factory default:**

1. Display the Factory Default menu. (Path: Main menu > Configuration > System Configuration > **Factory default**)

   Factory Default menu is displayed (*Figure 4-34*).

```
                              ASMi-52L
Factory default
1. Local factory default     ...
2. Remote factory default    ...
3. Local factory default W/O MNG  ...
4. Remote factory default W/O MNG ...
>
ESC - prev. menu ; ! – main menu ; & – exit
```

*Figure 4-34. Factory Default Menu*

2. From the Factory Default menu, perform one the following steps:
   - Select **Local Factory Default** to reset the local ASMi-52L.
   - Select **Remote Factory Default** to reset remote device.
   - Select **Local Factory Default W/O MNG** to reset all parameters, except for IP address, mask, default gateway and manager list of the local ASMi-52L.
   - Select **Remote Factory Default W/O MNG** to reset all parameters, except for IP address, mask, default gateway and manager list of the remote ASMi-52L.

***Note*** ***Local/Remote Factory Default W/O MNG*** *parameters are available only for the units equipped with the management LAN port.*

   ASMi-52L displays the following message:
   **Request to factory default !!! Confirm Y/N**

3. Type **Y** to confirm the reset.

   ASMi-52L resets all configuration parameters, except for the master clock (and IP values), to their default settings and restarts the system.

## Resetting the ASMi-52L Modem

You can reset the SHDSL interface of the modem or repeater, or perform the overall reset of the modem.

➤ **To reset the SHDSL interface or perform the overall device reset:**

1. From the System Configuration menu, select **Reset**.

   The Reset menu appears (see *Figure 4-35*).

2. From the Reset menu, select **Local Reset** to reset the local modem, **Remote Reset** to reset remote device.

   The Local/Remote Reset menu appears (see *Figure 4-36*).

3. From the Local/Remote Reset menu, select **Local Device Reset** to perform the overall reset or select **Local SHDSL Line Reset** to reset the SHDSL interface.

   A confirmation message appears.

4. Type **Y** to confirm the reset.

```
                              ASMi-52L
Reset
1. Local reset                          >
2. Remote reset                         >
3. Repeater reset                       >
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-35. Reset Menu*

```
                              ASMi-52L
Local Reset
1. Local device reset
2. Local SHDSL line reset
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-36. Local/Remote Reset Menu*

## Resetting the SHDSL Repeater

You can reset line interface of the SHDSL repeater from the local ASMi-52L via the Reset menu.

➤ **To reset line interface of the SHDSL repeater:**

1. Display the Reset menu. (Path: Main menu > Configuration > System configuration > Reset > **Repeater Reset**)

   The Repeater Reset menu appears (see *Figure 4-37*).

2. From the Repeater Reset menu, select **Repeater Number**.

   The Repeater Number menu appears.

3. From the Repeater Number menu, select repeater that you intend to reset.
4. From the Repeater Reset menu, select **Repeater SHDSL Line Reset** to reset the SHDSL line interface of the repeater.

   A confirmation message appears.
5. Type **Y** to confirm the reset.

```
                              ASMi-52L
Repeater Reset
1. Repeater SHDSL line reset...
2. Repeater number                >   (1)
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 4-37. Repeater Reset Menu*

# Chapter 5

# Configuring a Typical Application

## 5.1 Overview

This chapter provides detailed instructions for setting up two ASMi-52L modems in a typical application.

Configuration of ASMi-52L is performed via menu-driven embedded software, using a standard ASCII terminal or a PC running a terminal emulation application connected to the rear panel CONTROL port. Alternatively, ASMi-52L can be managed from a Telnet host connected to the 10/100BASE-T port on the rear panel. Read Chapter 4 to familiarize yourself with operation from a terminal.

### Application

Two ASMi-52L modems operating opposite each other. One in the central office, the second the customer premises equipment. User traffic is SHDSL.

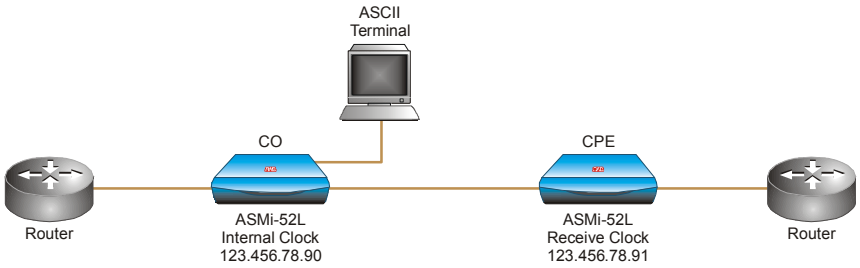


*Figure 5-1. Typical ASMi-52L Application*

### Guidelines for Configuring ASMi-52L Units

Each ASMi-52L unit must be configured individually. This typical application has the following configuration steps:

1. Setting the system: Setting the clock mode and the device Host IP address
2. Setting the line interface: Setting the Wire mode (2W or 4W)

## 5.2 Configuring the ASMi-52L units

Two ASMi-52L units must be configured for this application. Both units have the same configuration parameters, except for the host IP address and the master clock mode.

➤ **To prepare a control session:**

1. Connect the terminal cable to the CONTROL connector of ASMi-52L.
2. Turn the control terminal on.
3. Configure the terminal to the default communication parameters: 9.6 kbps, one start bit, eight data bits, no parity, one stop bit, VT100 emulation.
4. Select the full duplex mode.
5. Turn the terminal echo off.
6. Disable any type of flow control.

   You are now ready to start a control session.

➤ **To enter the user name and password:**

7. Type in your user name and press **<Tab>**.

***Note*** *You can leave the user name field empty (default), the default password is **1234.***

8. Type in your password at the > prompt (up to eight characters).

   ASMi-52L responds to your entry with asterisks.
9. Press **<Enter>**.

   The Main menu is displayed.

### Setting the ASMi-52L System

➤ **To configure the master clock.**

1. Display the Master Clock menu (Main menu > Configuration > System configuration > Master Clock)

   The Master Clock menu appears.

```
                          ASMi-52L
Master clock (Internal)
Receive
Internal
External
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

2. From the Master Clock menu, three clock modes are given **Receive**, **Internal**, or **External**.
   - Set the CO ASMi-52L unit clock to Internal
   - Set the CPE ASMi-52L unit clock to Receive
3. Select **Save** to save the changes.

➤ **To set the device host IP address:**

1. Display the host IP menu (Main menu > Configuration > System configuration > Management > Host IP.

   The host IP screen appears.

2. From the host IP menu, configure the following:
   - CO ASMi-52L – 123.456.78.90
   - CPE ASMi-52L – 123.456.78.91
   - Host IP mask – 255.255.255.1
   - Host default gateway IP address – 255.255.255.2

```
                          ASMi-52L
Host IP
Host IP address                  (123.456.78.90)
Host IP mask                     (255.255.255.1)
Host default gateway             (255.255.255.2)
Read community                   (public)
Write community                  (public)
Trap community                   (public)
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

3. Press ESC to return to previous menu (Management screen).
4. Save the changes.

## Setting the Line Interface

Set the line interface wire mode to 4-wire.

➤ **To set the wire mode:**

1. Display the Configured wire screen (Main menu > Configuration > SHDSL Configuration > SHDSL Port Configuration).

```
                          ASMi-52L
SHDSL port configuration
1. Transmission Mode                          (Annex B)
2. Power backoff                              (Enable)
3. Snext margin                               (Disable)
4. Current margin                             (Disable)
5. Asym PSD                                   (Symmetrical)
6. Line prob                                  (Adaptive rate)
7. Configured wire                            (4W)
8. Loop attenuation threshold (dB) [0-127]    (0)
9. SNR margin threshold (dB) [0-15]           (0)
10.   Save
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

2. Select Configured wire

The display is refreshed and a new value appears (**4W**).

3. Select **Save** to save the change
4. Reset ASMi-52L in order to activate the change.

# Chapter 6

# Troubleshooting and Diagnostics

This chapter describes the ASMi-52L diagnostic functions, which include:

- Status indications, alarms, power-up self-test
- Statistics collection
- Diagnostic tests (loopbacks and LEDs test).

## 6.1 Monitoring Performance

ASMi-52L has capabilities for collection of the SHDSL performance statistics. The statistics data is collected for the current 15-minute interval or current day. In addition ASMi-52L displays a statistics report for the last 96 intervals or the last seven days, elapsed since the last modem power-up.

### Displaying the Current SHDSL Statistics

SHDSL performance statistics for the current 15-minute interval and for the current 24-hour interval.

➤ **To display the current SHDSL statistics:**

1. Follow the path: Main menu > Monitoring > Physical Port Statistics.

   The Physical Port Statistics menu appears (see *Figure 6-1*).

```
                              ASMi-52L
Physical Port Statistics
1. SHDSL port performances ...
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 6-1. Physical Port Statistics*

2. From the Physical Port Statistics, select **SHDSL Port Performances** to display the SHDSL statistics

   The SHDSL Statistics menu appears (see *Figure 6-2*).

```
                              ASMi-52L
SHDSL port performances
1. SHDSL current performances ...
2. SHDSL all intervals local performances ...
3. SHDSL all intervals remote performances ...
4. SHDSL current day performances ...
5. SHDSL all days local performances ...
6. SHDSL all days remote performances ...
7. SHDSL clear local performances ...
8. SHDSL clear remote performances ...

>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 6-2. SHDSL Statistics Menu*

3. From the SHDSL Statistics menu, select:
   - **SHDSL Current Performances** to display the current SHDSL statistics
   - **SHDSL Current Day Performances** to display the current day statistics.

   The SHDSL Performance screen appears (see *Figure 6-3* and *Figure 6-4*).
4. Press **<Enter>** to refresh the display or press **<Esc>** to exit the SHDSL Performance screen.

```
                              ASMi-52L
SHDSL current performance
                          Local                    Remote
Current ES                (0)                      (0)
Current UAS               (0)                      (0)
Current SES               (0)                      (0)
Current LOSWS             (0)                      (0)
Current CRC anomalies     (0)                      (0)
Current Timer             (540 sec)                (540 sec)
Cur. noise margin         (2 dB)                   (2 dB)
Cur. line attenuation     (0 dB)                   (0 dB)
Cur. transmit power       (0. 0 dBm)               (0.0 dBm)
Cur. actual power         (0 dB)                   (0 dB)
Current Day Interval      (13)                     (13)
Day Intervals             (0)                      (0)

>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 6-3. SHDSL Performance Screen*

```
                                ASMi-52L
SHDSL current day performance
                          Local                    Remote
24 hour ES                (0)                      (0)
24 hour UAS               (0)                      (0)
24 hour SES               (0)                      (0)
24 hour LOWS              (0)                      (0)
24 hour CRC               (0)                      (0)
Cur. Day Timer            (10 hour)                (10 hour)
Day Intervals             (10)                     (10)

ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 6-4. SHDSL current day Performance Screen*

*Table 6-1. SHDSL Statistics Parameters*

| Display | Description |
|---|---|
| Current ES | Number of errored seconds in which one or more CRC (Cyclic Redundancy Check) error events occurred during the current interval. This value is updated every second. |
| Current UAS | Number of unavailable seconds in which a failed signal occurred during the current interval. This value is updated every second. |
| Current SES | Number of severely errored seconds in which 832 or more CRC error events occurred during the current interval. This value is updated every second. |
| Current LOSWS | Number of seconds with loss of sync word during the current interval. This value is updated every second. |
| Current CRC anomalies | Number of CRC error events recorded since the last time the register was cleared. |
| Current TIMER | Time in seconds from the beginning of the interval. This value is updated every second. |

## Displaying the SHDSL Statistics for all Intervals

You can display detailed SHDSL performance statistics for 96 last 15-minute intervals or seven last day (24 hour) intervals elapsed since the last power-up.

➤ **To display the SHDSL statistics for all intervals:**

1. From the SHDSL Statistics menu (see *Figure 6-2*), select **SHDSL All Intervals Performances** to display the SHDSL statistics for 15-minute intervals or select **SHDSL All Days Performances** to display the SHDSL statistics for day intervals.

   The SHDSL All Intervals screen appears (see *Figure 6-3* and *Figure 6-4*).

2. Press any key to return to the SHDSL Statistics menu.

```
                              ASMi-52L
SHDSL all intervals local/remote performances ...

    INTERVAL     CRC        LOSWS       ES        SES        UAS
       1          0          0          0         0          0

ESC-prev.menu; !-main menu; &-exit; ?-help; @-scroll
```

*Figure 6-5. SHDSL all Intervals Performances*

```
                              ASMi-52L
SHDSL all days local/remote performances ...

      DAY       CRC        LOSWS       ES        SES        UAS
       1          0          0          0         0          0



ESC-prev.menu; !-main menu; &-exit; ?-help; @-scroll
```

*Figure 6-6. SHDSL all Days Performances*

### Clearing the SHDSL Statistics

➤ **To clear the SHDSL statistics:**

- From the SHDSL Statistics menu (see *Figure 6-2*), select **SHDSL Clear Performances**, and press **<Enter>**.

  All SHDSL statistics data is cleared.

## 6.2 Detecting Errors

### Power-Up Self-Test

ASMi-52L performs a hardware self-test upon turn-on. The self-test sequence checks the critical circuit functions of the modem.

The results of the hardware self-test for the local or remote ASMi-52L are displayed in the System Status and Physical Status Port screens (see *Chapter 4*).

### Front Panel LEDs

The status of ASMi-52L is indicated by the ALM, TST and SYNC LED indicators located on the front panel. For the description of LEDs and their functions, refer to *Chapter 3*.

## 6.3 Handling Alarms

ASMi-52L detects fault conditions and initiates alarms to alert the user. ASMi-52L supports the following alarm types:

- System alarms, relating to the ASMi-52L chassis
- Port alarms, relating to a specific interface (SHDSL or DTE)
- Information messages (warnings)
- Events that trigger alarm activation.

ASMi-52L maintains two separate displays for the system and port alarms. In addition, the modem supports a local log file, holding up to 100 alarms.

An alarm or warning enters simultaneously both the alarms display and the log file, and the ALM LED turns on to indicate the condition. When the fault condition that caused the alarm is cleared, the alarm is removed from the alarm screen, but it remains in the log file, enabling you to view the alarm history. Events enter only the log file.

### Displaying All Alarms

ASMi-52L allows you to display all alarms, irrespective of their origin (system or port).

➤ **To display all alarms:**

1. Follow the path: Main menu >Monitoring > **Total Alarms**.

   The Total Alarms Screen appears (see *Figure 6-7*).

   The display of the alarms screen includes the source of alarm (local or remote device), name of the alarm, its number, severity (major or minor) and status (always ON), see *Figure 6-7*.

   Once the event that caused the alarm is cleared, the ALM indicator turns off.

2. Press **<Enter>** to refresh the display.

```
                              ASMi-52L
Total alarms

Source    Name                        Num       Severity      Status
Local 1   PSD NOT COMPATIBLE          16        MINOR         ON
Local 1   CRC ERROR OVER LINE A       21        MINOR         ON
```

*Figure 6-7. Total Alarms Screen*

### Viewing the System Log File

ASMi-52L maintains system alarm buffer, which can store up to 100 system alarm messages. The system log file specifies alarm or event name, severity (major or minor), status (ON or OFF), and time elapsed since the last ASMi-52L reset.

➤ **To display the system log file:**

- From the System Monitoring menu (*Figure 6-8*), select **System Log File**.

  The System Log File screen appears.

➤ **To clear the system log file:**

1. From the System Monitoring menu (*Figure 6-8*), select **System Clear Log File** to clear the log file.

   A confirmation message is displayed at the bottom of the screen.

2. Type **Y** and press **<Enter>**.

   All the system log file entries are deleted from the log file.

```
                              ASMi-52L
System Monitoring
System status >
System log file
System clear log file                          ...

>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 6-8. System Monitoring Menu*

## Masking Port Alarms

ASMi-52L allows you to mask alarms generated by local and remote devices.

➤ **To mask ASMi-52L alarms:**

- From the Physical Port Local Status menu (*Figure 6-9*), select **Line mask**.

  The Line Mask value changes to Mask. ASMi-52L starts ignoring all alarms generated devices connected to the modem.

```
                              ASMi-52L
Physical port status
1. Port status
2. Line mask                                (NO_MASK)
3. Port log file
4. Port clear log file
>
ESC-prev.menu; !-main menu; &-exit; @-scroll
```

*Figure 6-9. Physical Port Status Menu*

## Using the Port Log File

ASMi-52L maintains port alarm buffer, which can store up to 100 alarm messages. The port log file specifies alarm or event name, severity (major or minor), status (ON or OFF), and time elapsed since the last ASMi-52L reset.

➤ **To display the log file:**

1. From the Monitoring menu, select **Physical Ports Monitoring.**

   The Physical Ports Monitoring menu appears.

2. Select **Physical Port Status** to display the local port status.

   The Physical Port Status menu appears (see *Figure 6-9*).

3. From the Physical Port Status menu, select **Port Log File**.

The Port Log File screen appears (see *Figure 6-10*).

```
                              ASMI 52
Port log file

Source  Name                      severity              Status   time
1   Local MNGMNT IS DOWN            MAJOR              ON   : 0:0:0
2   Local SYNC LOSS LINE A          MAJOR              ON   : 0:0:1



ESC-prev.menu; !-main menu; &-exit; @-scroll; ?-help  1 user(s)
```

*Figure 6-10. Port Log File Screen*

➤ **To clear the log file:**

1. From the Physical Port Status menu, select **Port Clear Log File** to clear the log file.

   A confirmation message is displayed at the bottom of the screen.

2. Type **Y** and press **<Enter>**.

   All the log file entries are deleted from the log file.

*Table 6-2. ASMi-52L Alarms and Warnings*

| Number | Terminal Message | Port | Description | Severity |
|---|---|---|---|---|
| 1 | SELF TEST ERROR | – | Failure occurred during self-test | Major |
| 2 | SOFTWARE DOWNLOAD | – | Software download is in progress | Warning |
| 3 | LAN2 NOT CONNECTED | DTE | The Ethernet interface is not connected to LAN | Major |
| 4 | LLB FROM DTE | DTE | Local loopback has been activated by physical connector (units with V.35 DTE interface only) | Warning |
| 5 | RLB FROM DTE | DTE | Remote loopback has been activated by physical connector (units with V.35 DTE interface only) | Warning |
| 6 | PROP PROT FAIL | SHDSL | FE Management by EOC failed | Warning |
| 7 | LAN3 NOT CONNECTED | DTE | The Ethernet interface is not connected to LAN | Major |
| 8 | LAN NOT CONNECTED | DTE | The Ethernet interface is not connected to LAN | Major |
| 9 | LOOP ATTN. OVER LINE A | SHDSL | Line A loop attenuation has exceeded the alarm threshold | Minor |
| 10 | LOOP ATTN. OVER LINE B | SHDSL | Line B loop attenuation has exceeded the alarm threshold (4-wire units only) | Minor |
| 11 | SNR MARGIN OVER LINE A | SHDSL | Line A signal-to-noise margin has exceeded the alarm threshold | Minor |
| 12 | SNR MARGIN OVER LINE B | SHDSL | Line B signal-to-noise margin has exceeded the alarm threshold (4-wire units only) | Minor |
| 13 | LOSW FAILURE OVER LINE A | SHDSL | Loss of Sync Word is detected on line A | Minor |
| 14 | LOSW FAILURE OVER LINE B | SHDSL | Loss of Sync Word is detected on line B (4-wire units only) | Minor |
| 15 | DATA RATE NOT COMPATIBLE | DTE | Mismatch in the line rate and data rate. Applicable for the ASMi-52L units with V.35 interface, operating in adaptive rate mode | Major |
| 16 | PSD NOT COMPATIBLE | SHDSL | Mismatch between PSD mode selected by the user and PSD mode used by the line | Minor |
| 17 | SYNC LOSS LINE A | SHDSL | SHDSL line A is nor synchronized | Major |
| 18 | SYNC LOSS LINE B | SHDSL | SHDSL line B is nor synchronized (4-wire units only) | Major |
| 19 | MNGNT IS DOWN | SHDSL | The management link between local and remote units is down | Major |
| 21 | CRC ERROR OVER LINE A | SHDSL | Excessive CRC-6 errors have been detected on SHDSL line A | Minor |
| 22 | CRC ERROR OVER LINE B | SHDSL | Excessive CRC-6 errors have been detected on SHDSL line B (4-wire units only) | Minor |

| Number | Terminal Message | Port | Description | Severity |
|---|---|---|---|---|
| 23 | NO DTE INTERFACE | DTE | No DTE interface is detected | Major |
| 42 | WIRE MODE NOT COMP | SHDSL | Mismatch between line interface types (2/4-wire) between local and remote units | Major |
| 43 | SPAN IS NOT FULL | SHDSL | Distance between adjacent repeaters is too long. You can identify the problematic segment by checking the Port Status screen. In the Number of Repeaters line, it displays the last repeater identified by ASMi-52L. This means that the distance between the last detected repeater and the next repeater exceeds it maximum range. | Major |
| 44 | LOOP ATTN. OVER NETWORK SIDE | SHDSL | Loop attenuation at the network side of the repeater has exceeded the alarm threshold | Minor |
| 45 | LOOP ATTN. OVER CUSTOMER SIDE | SHDSL | Loop attenuation at the customer side of the repeater has exceeded the alarm threshold | Minor |
| 46 | SNR MARGIN OVER NETWORK SIDE | SHDSL | Signal-to-noise margin at the network side of the repeater has exceeded the alarm threshold | Minor |
| 47 | SNR MARGIN OVER CUSTOMER SIDE | SHDSL | Signal-to-noise margin at the customer side of the repeater has exceeded the alarm threshold | Minor |
| 48 | LOSW FAILURE OVER NETWORK SIDE | SHDSL | Loss of Sync Word is detected at the network side of the repeater | Minor |
| 49 | LOSW FAILURE OVER CUSTOMER SIDE | SHDSL | Loss of Sync Word is detected at the customer side of the repeater | Minor |
| 50 | LINE PARAMERS NOT COMP | SHDSL | Modems fail to synchronize due to the configuration parameters mismatch. For example:<br>• The modems operate in the adaptive mode (Line Prob is set to Adaptive Rate) and distance between them exceeds the maximum range.<br>• ASMi-52L with V.35 interface operates opposite remote unit with E1 interface. If the modem V.35 is set to the data rate which is not supported by the remote unit, e.g. 2304 kbps, the units will not synchronize. | Major |
| 51 | EXTERNAL TO INTERNAL CLOCK | DTE | Device is in External clock, but clock is not connected | Major |
| 52 | LOOP ATTN. OVER NETWORK B SIDE | SHDSL | Loop attenuation at the network side of the repeater has exceeded the alarm threshold | Minor |
| 53 | LOOP ATTN. OVER CUSTOMER SIDE | SHDSL | Loop attenuation at the customer side of the repeater has exceeded the alarm threshold | Minor |
| 54 | SNR MARGIN OVER NETWORK B SIDE | SHDSL | Signal-to-noise margin at the network side of the repeater has exceeded the alarm threshold | Minor |
| 55 | SNR MARGIN OVER CUSTOMER SIDE | SHDSL | Signal-to-noise margin at the customer side of the repeater has exceeded the alarm threshold | Minor |

| Number | Terminal Message | Port | Description | Severity |
|---|---|---|---|---|
| 56 | LOSW FAILURE OVER NETWORK B SIDE | SHDSL | Loss of Sync Word is detected at the network side of the repeater | Minor |
| 57 | LOSW FAILURE OVER CUSTOMER SIDE | SHDSL | Loss of Sync Word is detected at the customer side of the repeater | Minor |
| 58 | LINE PARAMERS NOT COMP | SHDSL | Modems fail to synchronize due to the configuration parameters mismatch. For example:<br>• The modems operate in the adaptive mode (Line Prob is set to Adaptive Rate) and distance between them exceeds the maximum range.<br>• ASMi-52L with V.35 interface operates opposite remote unit with E1 interface. If the modem V.35 is set to the data rate which is not supported by the remote unit, e.g. 2304 kbps, the units will not synchronize. | Major |
| 59 | EXTERNAL TO INTERNAL CLOCK | DTE | Device is in External clock, but clock is not connected | Major |
| 52 | LOOP ATTN. OVER NETWORK B SIDE | SHDSL | Loop attenuation at the network side of the repeater has exceeded the alarm threshold | Minor |

*Table 6-3. ASMi-52L Events*

| Terminal Message | Description |
|---|---|
| CRC EVENT LINE A | CRC errors are detected on line A |
| CRC EVENT LINE B | CRC errors are detected on line B |
| SW DOWNLOAD FAIL | Software download failed |
| BUFFER OVERFLOW | More than 100 entries registered in the log file |
| WD RESET FROM GS | Watchdog error from the SHDSL chipset |
| GS OUT OF SYNC ABORT | SHDSL framer out of sync |
| GS LOSS OF CARRIER DETECT | SHDSL carrier loss |
| GS SQ ERROR DETECT | SHDSL signal quality value is more than 22.7 dB |
| GS CRC ERROR DETECT | More than three SHDSL CRC errors were detected during last second |
| REP SEGD ERROR DETECT | SEGD error from repeater: sync fail on another part of the span |
| TRAINING MODE STACK | CPE Training state timeout is exceeded (3 min) |
| DEVICE PRIMARY CALL FAIL | Primary number dial attempt has failed |
| DEVICE DIAL CALL FAIL | Dial out call cycle has failed |

## 6.4 Troubleshooting

Use the chart shown in *Table 6-4* to identify and remedy problems in unit operation.

*Table 6-4. Troubleshooting Chart*

| Fault | Probable Cause | Remedial Action |
|---|---|---|
| Power led off | No power supplied to unit | 1. Check power source.<br>2. Check power cable connected and correctly wired. |
| Ethernet Link Led off | • No Ethernet Link detected<br>• Ethernet port in switch and ASMi-52L are not in the same rate or duplex mode | 1. Check cable connected and correctly wired.<br>2. Check switch and ASMi-52L Ethernet port configuration (negotiation, rate, duplex mode).<br>3. Use Log File to check events. |
| Local or remote Sync Loss led on | No Link detected at the local or remote site | 1. Check cable connected and correctly wired.<br>2. Check physical connection (use loopbacks).<br>3. Check configuration of lines at local and remote sites.<br>4. Use Log File to check events. |
| No traffic flow between two units | Configuration or logical layer problems | 1. Use System Interface Status screen for assistance.<br>2. Use Log File to check events.<br>3. Check ASMi-52L configuration and, if necessary, other ASMi-52L parameters. |
| Partial Traffic Flow | Timing configuration is not properly set | Check timing settings. |

## 6.5 Testing ASMi-52L

The user-controlled test functions of ASMi-52L consists of the loopback tests and LEDs test. The purpose of these tests is to determine the source of a break in the data flow.

***Note***

- *Loopbacks are supported in X.21 and V.35 versions only.*
- *Both local and remote* ASMi-52L *units must be configured and synchronized properly to allow remote loopback activation.*
- *Only one loopback can be activated at a time, either on the local or remote unit.*

### Running Loopback Tests

ASMi-52L supports the local and remote loopbacks as per ITU V.54, by using the following methods:

- From the supervisory terminal.
- Via corresponding pins of the synchronous interface, for the ASMi-52L with V.35 interfaces only.

#### Running the Local Loopback

The local loopback (LLB) checks the performance of the local ASMi-52L modem, the local DTE and connection between them (see *Figure 6-11*). The LLB can be performed separately on the local and remote modems.

ASMi-52L allows you to set the loopback timeout causing the LLB to deactivate automatically after the desired period of time.

***Note*** *Timeout set to 0 (zero) is forever. Avoid setting timeout to 0 as local control is lost during LLB*

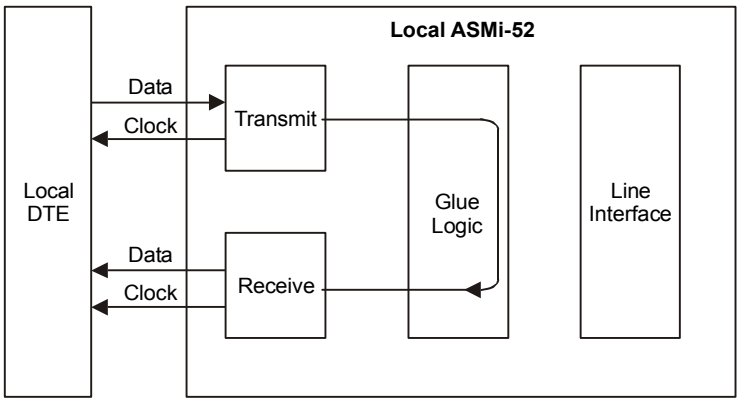


*Figure 6-11. Local Loopback*

➤ **To run the local loopback:**

1. From the Main menu, select **Diagnostics**.

The Diagnostics menu is displayed (see *Figure 6-12*).

2. From the Diagnostics menu, select:
   - **Local Test** to run the LLB on the local ASMi-52L
   - **Remote Test** to run the LLB on the remote ASMi-52L.

   The Local/Remote Test menu appears (see *Figure 6-13*).
3. Select **LLB**.

   The LLB value in parenthesis changes to ON. Also, an additional parameter, *Loop Timeout*, is displayed for the local ASMi-52L.
4. Select **Loop Timeout,** if you want to set loopback timeout (in minutes)**.**

   The Loop Timeout value changes.

***Note*** *Avoid setting timeout to 0 as local control is lost during LLB. 0=Forever*

5. Once you selected the loopback timeout, select **Save** to activate the LLB.

   The LLB is initiated. The TST indicator lights up and the ASMi-52L units lose synchronization.

```
                          ASMi-52L
Diagnostics
1. Local Test                 >
2. Remote Test                >
3. Repeater Test              >
>

ESC-previous menu ; !-main menu ; &-exit terminal
```

*Figure 6-12. Diagnostics Menu*

```
                          ASMi-52L
Local Test or Remote Test
LLB from DTE: OFF
RLB from DTE: OFF

1. LLB (ON)
2. Loop Timeout (min)(0-4095)      ...(5)
3. LEDs test
4. Clear all
5. Save

>

ESC-previous menu ; !-main menu ; &-exit; @-scroll
```

*Figure 6-13. Local/Remote Test Menu*

## Running the Remote Loopback

The remote loopback (RLB) checks the performance of both the local and remote ASMi-52L modems, and the lines connecting them (see *Figure 6-14*).

ASMi-52L allows you to set the loopback timeout causing the RLB to deactivate automatically after the desired period of time.

***Note*** *RLB cannot be initiated from a CPE unit if the CO operates with an external clock, and is configured to one of the following data rates:*
*2-wire: 2112 kbps, 2176 kbps, or 2240 kbps*
*4-wire: 4224 kbps, 4352 kbps, or 4480 kbps*

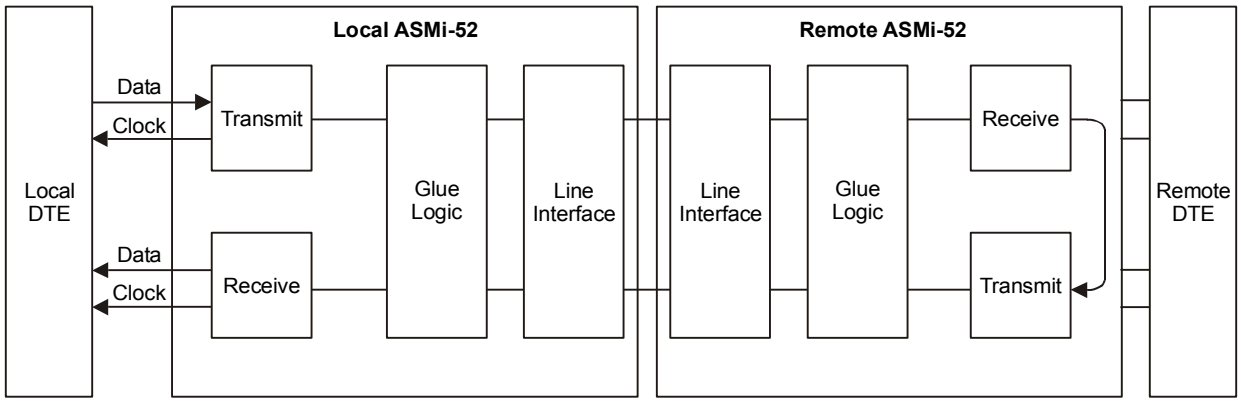


*Figure 6-14. Remote Loopback*

➤ **To activate the remote loopback:**

1. From the Diagnostics menu (see *Figure 6-12*), select **Local Test** to run the RLB on the local ASMi-52L, or select **Remote Test** to run the RLB on the remote ASMi-52L.

   The Local/Remote Test menu is displayed (see *Figure 6-13*).

2. Select **RLB**.

   The RLB value in parenthesis changes to ON. Also, an additional parameter, *Loop Timeout*, is displayed for the local ASMi-52L.

3. Select **Loop Timeout,** if you want to set loopback timeout (in minutes)**.**

   The Loop Timeout value changes.

***Note*** *Loop timeout = 0 is forever!*

4. Once you selected the loopback timeout, select **Save** to activate the RLB.

   The RLB is initiated. The TST indicators light up on both local and remote units.

## Running Remote Loopback at a Repeater

Remote loopback can also be run at an SHDSL repeater installed in the line. The RLB is activated from the CO unit only. The RLB checks performance the repeater at which it is activated, all preceding repeaters, the local ASMi-52L and lines connecting them (see *Figure 6-15*).

➤ **To activate the remote loopback at SHDSL repeater:**

1. From the Diagnostics menu, select **Repeater Test**.

   The Repeater Test menu appears (see *Figure 6-16*).

2. From the Repeater Test menu, select **Repeater Number** and choose repeater at which you intend to activate the RLB Network.

3. From the Repeater Test menu, select **RLB Network**.

   The RLB Network value in parenthesis changes to ON. Also, an additional parameter, *Loop Timeout*, is displayed.

4. Once you selected the loopback timeout, select **Save** to activate the RLB Network.

   The RLB at the repeater is initiated.

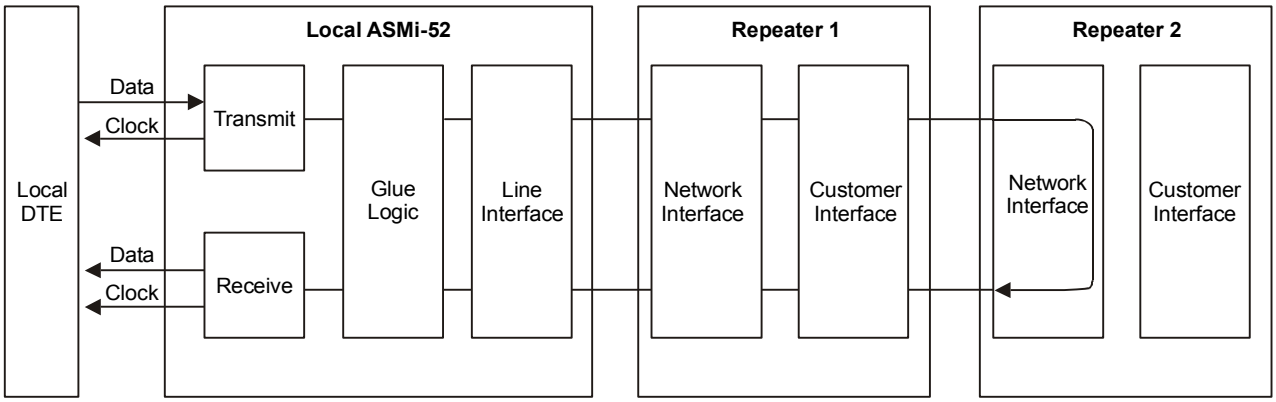


*Figure 6-15. Remote Digital Loopback at SHDSL Repeater*

```
                              ASMi-52L
Repeater Test

1. RLB Network                              (ON)
2. Loop Timeout(min)[0 - 4095]                 ... (5)
3. Repeater number                          > (1)
4. Save

>
ESC-previous menu ; !-main menu ; &-exit
```

*Figure 6-16. Repeater Test Menu*

## Deactivating the Loopbacks

➤ **To deactivate a running loopback:**

- From the Local or Remote Test menu, type the number corresponding to the loopback in progress to change its value from ON to OFF and choose **Save**.

  The TST indicator turns off.

➤ **To deactivate multiple loopbacks:**

- From the Local or Remote Test menu, select **Clear All**.

  The TST indicator turns off.

### Running the LEDs Test

The user can perform the front-panel LED test to verify that the local unit indicators are functioning properly.

➤ **To run the LEDs test:**

1. From the Diagnostics menu (see *Figure 6-12*), select **Local Test** to run the LEDs test on the local ASMi-52L.

   The Local Test menu is displayed (see *Figure 6-13*).

2. Select **LEDs Test**.

   All the front-panel LED indicators light up for two seconds.

## 6.6 Technical Support

Technical Support for this product can be obtained from the local distributor from whom it was purchased.

For further information, please contact the RAD distributor nearest you or one of RAD's offices worldwide.

# Appendix A
# Interface Connector Specifications

## A.1 DTE Interface Connectors

### V.35 and X.21 Interface Connectors

The V.35 interface of the ASMi-52 modem terminates in a 34-pin female connector. The X.21 interface terminates in a 15-pin, D-type female connector. *Table A-1* lists the pin assignment of the V.35 and X.21 interface connectors.

*Table A-1. V.35 and X.21 Connector Pinouts*

| Signal Function | V.35 34-Pin | | X.21 DB-15 | | Description |
|---|---|---|---|---|---|
| | Pin | Circuit | Pin | Circuit (Function) | |
| Protective Ground | A | Frame 101 | 1 | ---- (Shield) | Chassis Ground. It may be isolated from Signal Ground. |
| Signal Ground | B | Signal 102 GND | 8 | ---- (GND) | Common signal and DC power supply ground. |
| Transmitted Data | P<br>S | TD(A) 103<br>TD(B) 103 | 2<br>9 | T(A)<br>T(B) (Transmit) | Serial digital data from DTE. In sync applications, the data translations must occur on the rising edge of the transmit clock. |
| Received Data | R<br>T | RD(A) 104<br>RD(B) 104 | 4<br>11 | R(A)<br>R(B) (Receive) | Serial output from the modem receiver. In sync applications, the data translations occur on the rising edge of the clock. |
| Request to Send | C | RTS 105 | 3<br>10 | C(A)<br>C(B) (Control) | A positive level to ASMi-52 when data transmission is desired. |
| Clear to Send | D | CTS 106 | | | A positive level from ASMi-52 with delay, after receipt of Request to Send, and when ASMi-52 is ready to transmit. |
| Data Set Ready | E | DSR 107 | | | A positive level from ASMi-52 when power is on, and ASMi-52 is (a) not in DIGITAL LOOP mode, or (b) has not received a REMOTE LOOPBACK signal from the remote unit. |

| Signal Function | V.35 | | X.21 | | Description |
|---|---|---|---|---|---|
| | 34-Pin | | DB-15 | | |
| | Pin | Circuit | Pin | Circuit (Function) | |
| Data Terminal Ready | H | DTR 108 | | | Not used |
| Carrier Detect | F | DCD 109 | 5<br>12 | I(A)<br>I(B) (Indication) | A positive level from ASMi-52, except when a loss of the received signal is detected or when Data Set Ready is negative. |
| External Transmit Clock | U<br>W | SCTE(A) 113<br>SCTE(B) 113 | 7<br>14 | (A)<br>(B) | A serial data rate clock input from the data source. Positive clock translations must correspond to data transmissions. |
| Transmit Clock | Y<br>a | SCT(A) 114<br>SCT(B) 114 | 6<br>13 | S(A)<br>S(B) (Signal Timing) | A transmit data rate clock for use by an external data source. Positive clock translations correspond to data translations. |
| Receive Clock | V<br>X | SCR(A) 115<br>SCR(B) 115 | | | A receive data rate clock output used by an external data sink. Positive clock translations correspond to data translations. |
| Local Analog Loop | L and j | | | | A control signal input, which, when on, sets ASMi-52 into Local Analog Loopback (V.54 Loop 3). |
| Remote Digital Loop | N and h | | | | A control signal input which, when on, commands ASMi-52 to send a remote Loopback command (V.54 Loop 2) to the remote ASMi-52. |
| Test Indicator | n and k | | | | A Control Signal output from ASMi-52; positive during any test mode. |

## Ethernet Connector

*Table A-2. Ethernet Connector Pinout*

| Pin | Function |
|---|---|
| 1 | Tx+ |
| 2 | Tx– |
| 3 | Rx+ |
| 4, 5 | – |
| 6 | Rx– |
| 7, 8 | – |

## A.2 CONTROL Connector

The control terminal interface terminates in a V.24/RS-232 9-pin D-type female connector, which can be configured as DCE or DTE (see the *Selecting the Control Port Interface* section in Chapter 4). *Table A-3* lists the CONTROL connector pin assignments. *Table A-4* describes the control signal direction.

*Table A-3. CONTROL Connector Pinout*

| Pin | Function |
|---|---|
| 1 | Data Carrier Detect (DCD) |
| 2 | Receive Data (RD) |
| 3 | Transmit Data (TD) |
| 4 | Data Terminal Ready (DTR) |
| 5 | Ground (GND) |
| 6 | Data Set Ready (DSR) |
| 7 | Request To Send (RTS) |
| 8 | Clear To Send (CTS) |
| 9 | Ring Indicator (RI) |

*Table A-4. CONTROL Connector Signal Direction*

| Control Signal | Interface Type | |
|---|---|---|
| | DCE | DTE |
| CTS | Out | Not Used |
| DCD | Out | Out |
| DSR | Out | Out |
| DTR | In | In |
| RI | Not Used | In |
| RTS | In | In |

***Note***

- *When connected and turned on, the terminal sets the DTR line ON (active) to gain control of the ASMi-52L and starts a configuration or monitoring session.*
- *In DTE mode, the DSR signal follows the RI signal*
- *In DCE mode, the DSR signal follows the DTR signal*

When connecting a dial-out modem to the CONTROL port for the alarm reporting, a cross cable must be used. *Table A-5* pinout of a typical cross cable with two male DB-9 connectors.

*Table A-5. Cross Cable Pinout*

| DB-9 Pin | DB-9 Pin |
|---|---|
| 2 | 3 |
| 3 | 2 |
| 4 | 6 |
| 5 | 5 |
| 6 | 4 |
| 7 | 8 |
| 8 | 7 |

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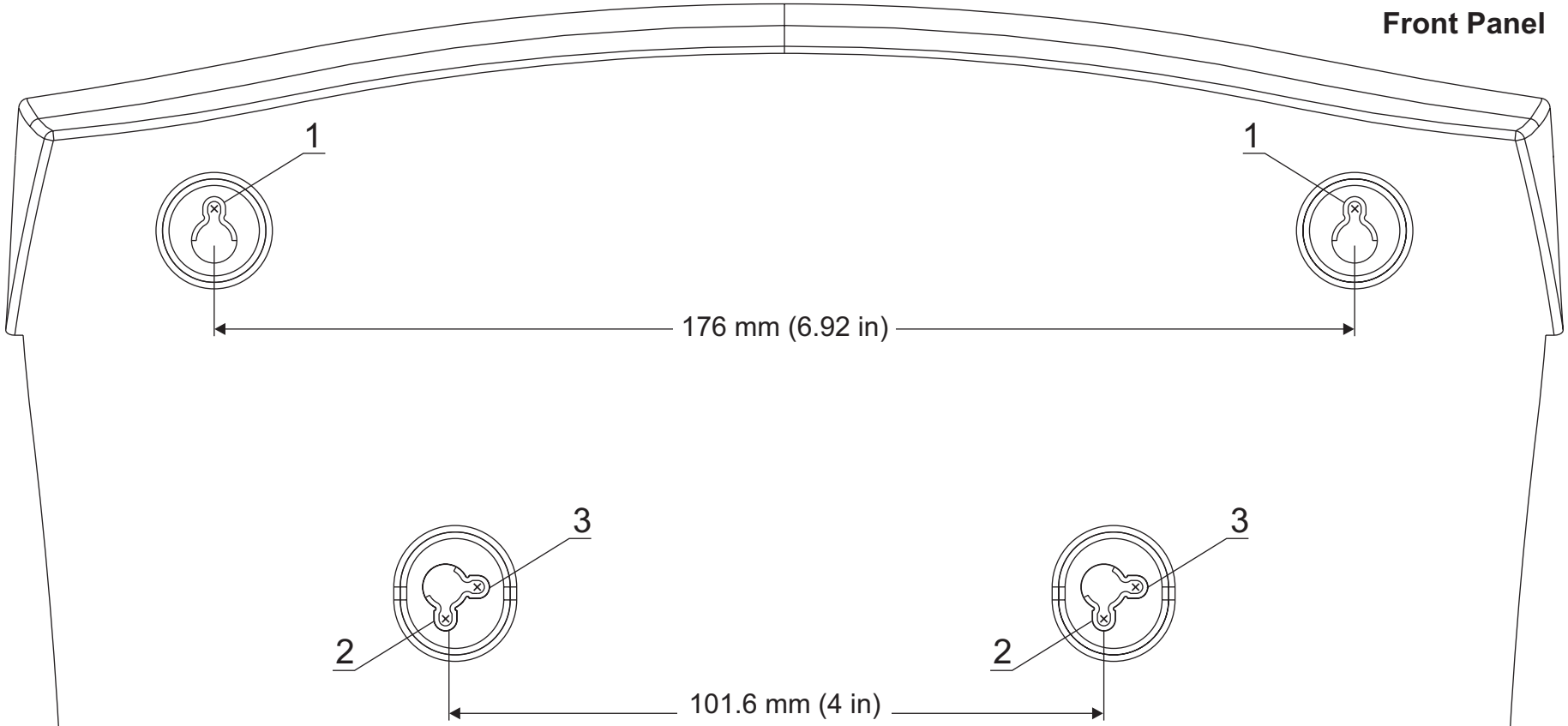
# Supplement
## Drilling Template for Wall Installation




This panel is drawn to scale.
To drill the holes for a wall installation, tear this page out of the manual or print it on letter-size paper (8.5"x11.0") and hold it against the wall.

LEDs facing up - drill at **1**.
LEDs facing down - drill at **2**.
LEDs facing left - drill at **3**.

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Manual Name: ASMi-52L

Publication Number: 465-200-04/06

Please grade the manual according to the following factors:

| | *Excellent* | *Good* | *Fair* | *Poor* | *Very Poor* |
|---|---|---|---|---|---|
| Installation instructions | ❒ | ❒ | ❒ | ❒ | ❒ |
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| Manual organization | ❒ | ❒ | ❒ | ❒ | ❒ |
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Type of Error(s) or Problem(s):

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- ❒ Difficulty in finding needed information
- ❒ Missing information
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Publication No. 465-200-04/06